DRiVER

JUNE 1978

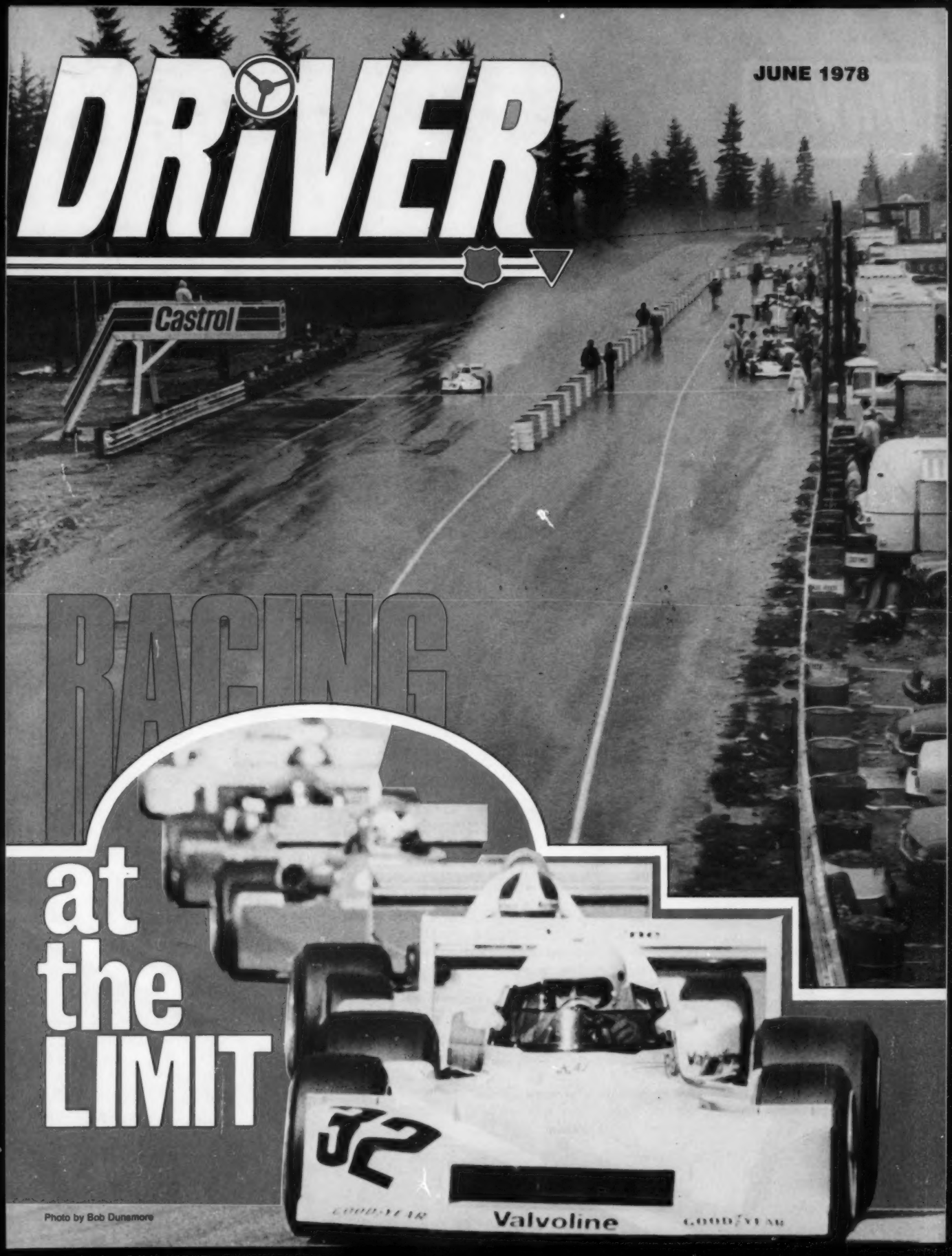
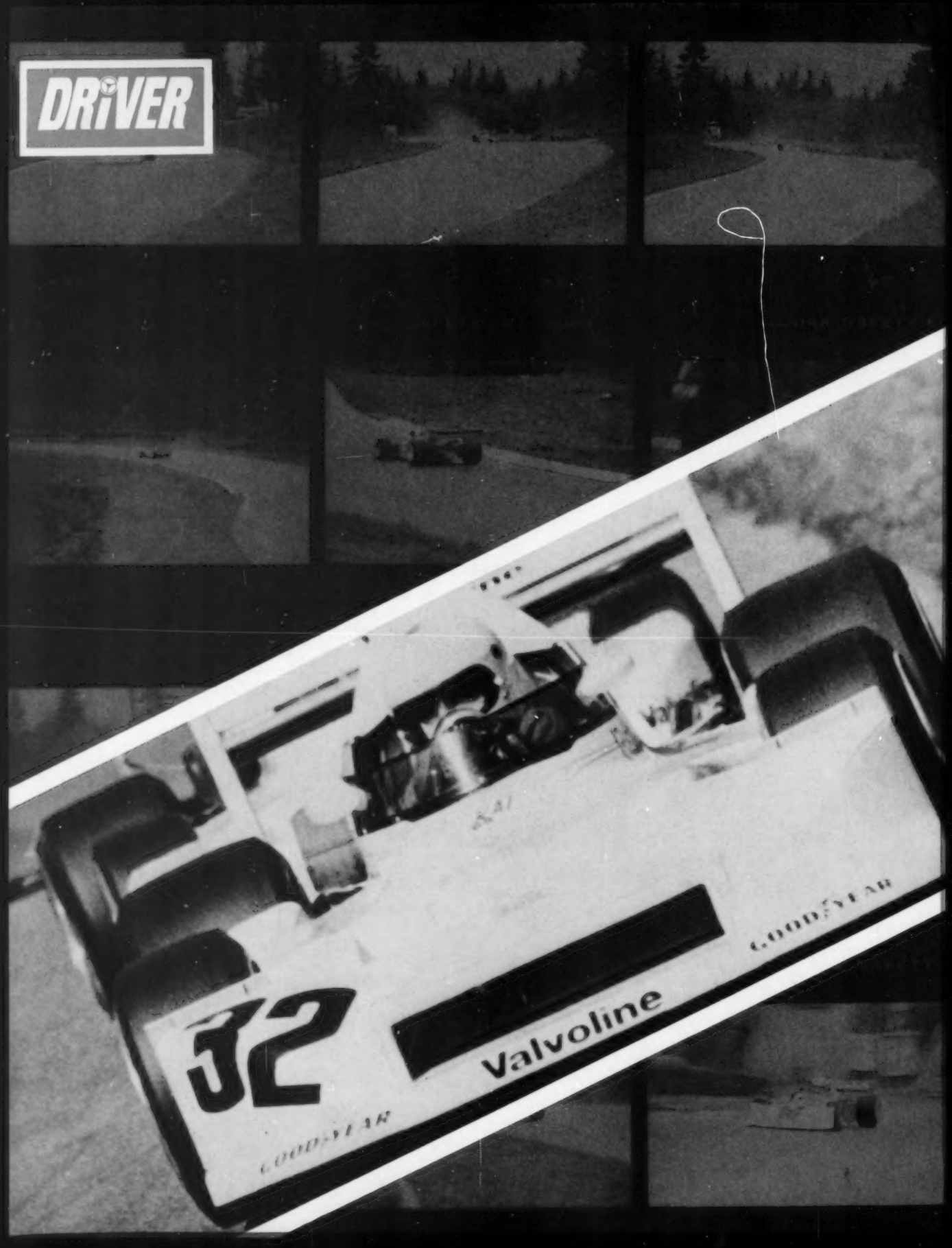


Photo by Bob Dunsmore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GOODYEAR

PART I

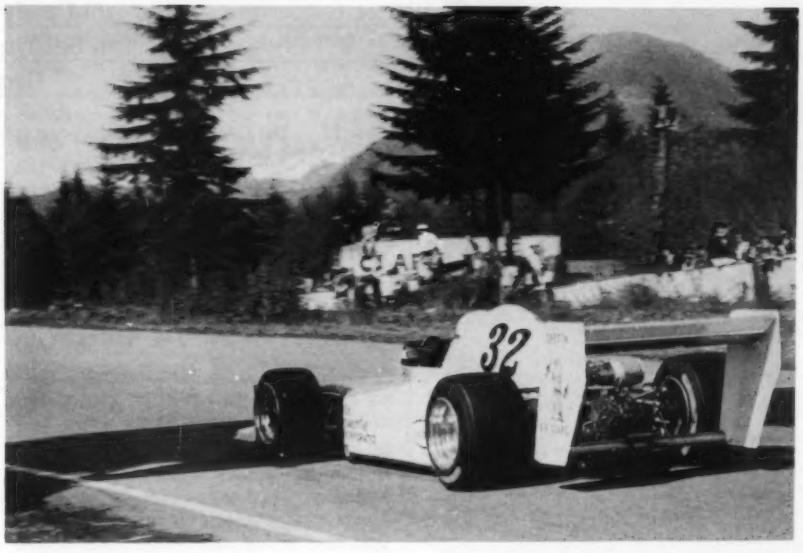
Whether Flying or Racing, this Chief of Safety Goes... at the LIMIT

Capt Mike Fisher is your average, everyday Chief of Safety. Mission-oriented, safety conscious, affable and capable, Mike is just who you'd expect to see behind the Safety Chief's desk. His work life is one of routine and special inspections, report writing, rules and regulations, writing, briefing, etc., etc. His average, routine life continues on weekends. That's when you can usually find Mike going 160 mph down the back straight of a race track in a car about two inches off the ground.

AHA! you say . . . are my eyes deceiving me or did I just read that a Chief of Safety, a guy who wears a green hard-hat and goes around hassling people about safety, is a RACER??

You read it correctly, folks. Mike Fisher, private citizen, is a professional automobile racer in a type of car just one step removed from Formula One Grand Prix.

"OK," you say, "what's going on here? All safety people do is go around telling folks that racing is dangerous . . . just like scuba diving, sky diving, tiddly winks, and those other unsafe sports." But think about it; be honest with yourself . . . have you ever heard a safety person tell anyone NOT to participate in a particular type of sport? Have you, really? If you remember back, you'll probably find that what the safety person said was "do the sport of your choice, but do it safely."



It's been our experience that there are at least two organizations on every base that are misunderstood. One of them is always the QC branch, and the other is Safety.

Again, if you think about it, the purpose of each of them is NOT to keep you from doing your thing, but to assist you in doing it safely, so that you or someone you care about doesn't wind up hurt. QC checks other people's work so that an innocent third party doesn't get injured or valuable aircraft damaged. Safety tries to educate people so that they make intelligent decisions relative to what they are attempting to accomplish.

That's why having a Chief of Safety going 160 mph isn't the contradiction that it seems to be. Safety people are people first, and safety people second . . . they're just like the rest of us. In an attempt to put to rest the rumor that the safety guys are only concerned with telling people what not to do, DRIVER accompanied Capt Fisher to Westwood Raceway Park near Vancouver, British Columbia, for the second in a series of Formula Atlantic races. We watched Mike put his brand new March car through a series of tire and handling tests, helped his crew get the car set up correctly for the Westwood track, sat in the cold rain with Mike and debated the chances of the race being run in the rain, and slyly stuck our tape recorder under his nose every time we got the chance.

Next month, we'll print the interview we conducted with Mike. We think you'll find it interesting as he gives his views on everything from racing to being a Chief of Safety. But

continued

DRIVER

THE
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FOR THE MILITARY DRIVER

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JUN

VOLUME 12 NUMBER 1

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THE EDITOR SPEAKS
DOUBLE CLUTCH

ALTERNATE FUELS

Some day you may be driving a car fueled by wood pulp, corn stalks, grain, sugar beets, potatoes or manure. But that day is not just around the corner says the Automotive Information Council. Alternative fuels are still a long way from economic reality.

On the surface "gasohol," a blend of distilled organic alcohol and gasoline, sounds like a miracle substance to stretch the available world supply of petroleum. Small-scale research has been directed in this area since 1930 and is now accelerating.

For example, the telephone company in Sao Paulo, Brazil, powers 400 Volkswagen "beetles" with fuel made entirely of distilled sugar, and service stations there sell a gasohol blend of 20 percent alcohol and 80 percent petroleum.

But wide-scale use is hampered by cost and production. A gallon of grain alcohol currently costs about $1.20 to produce, according to the U.S. Department of Energy. New distillation facilities would have to be built to accommodate demand for the product.

Automakers suggest that major changes to the engine and carburetor will be necessary if the alcohol content of fuel rises above 15 percent because of the difference in combustion. But researchers believe they are capable of building engines to run on any type of fuel.

Research for alternative fuels which provide low pollution, easy storage and economic use goes on as specialists around the world ponder ways to keep automobiles on the road despite future shortages of existing energy supplies. Grain-producing states, especially, are interested in further research as an answer to crop surpluses, and the use of coal also is undergoing extensive tests as an alternative fuel.

But none of the alternatives yet come close to the cost of gasoline.

now, let's briefly explain about Formula Atlantic cars and the series in which they race.

Formula Atlantic: Formula Atlantic is generally regarded as Grand Prix racing's "farm system." Formula One drivers Gilles Villeneuve and Keke Rosberg came directly from Formula Atlantic, as did Patrick Depailler and former World Champion James Hunt. The formula represents a natural progression to Grand Prix ranks. The cars are 1600cc open-wheeled, scaled-down Formula 1 cars made by March, Lola, Ralt, and Chevron. Overhead cam Ford Cosworth BDN engines push the cars to speeds in excess of 160 mph, turning out about 212 hp in the process.

The annual seven-event series began in 1971 and was called the Formula B Player's Challenge Series. It became Formula Atlantic in 1974 and came under the sponsorship of Labatt in that year.

Every series entrant buys his Ford Cosworth engine from Ecurie Canada Engines. This insures that all engines are as similar as possible so no entrant has an advantage, and a portion of the difference between the cost of the engine kits and their retail price goes to the Canadian Auto Sports Club to be used as prize money. Since the engines are virtually identical, it places a premium on driver skill which is unique among racing series.

Back at the Race: The Friday and Saturday practice sessions were over. It is now Sunday, and it's time to find out if the car, the crew, and the driver have it all together.

In practice sessions on Friday and Saturday Mike had run well, logging a sixth-fastest time Friday and thirteenth-fastest on Saturday. However, since the Friday session was held in the rain, race officials decided to use the Saturday qualifying times which relegated Mike to thirteenth place on the grid, or starting line.

Both practice sessions had gone well otherwise. The brand new March 78B car had been thoroughly debugged by crew members Ralph Young and Gregg Lapinski, chassis settings had been finalized for both rain and dry track conditions, and Mike had gotten in enough practice laps to feel confident about his knowledge of the track.

The only possible area of worry was the engine. It ran well enough, but the basic problem was that it was a rented engine, and engine man Gregg Lapinski felt he couldn't exercise enough "quality control" over the engine assembly and break-in. Without going into too much detail, the rented engine was necessary because, as we mentioned earlier, all engines used in the Labatt Formula Atlantic Series must be identical, so a certain number of engines are built and certified as "series" engines. The March car had not come with a series engine, and Mike hadn't had time to build one, so they had to rent a serialized series engine from the March distributor.

Sunday's practice session went well, with Mike turning times only .5 seconds away from those of the race favorite, Keke Rosberg. Mike honestly felt his chances were good to win, and excellent to place in the top 5, something rare for a brand-new car. As the crew rechecked (for about the tenth time) all the chassis settings, fluid levels, linkage movements, etc., etc., we were surprised to see how thorough they were. We had expected them to take care of little things, but how about measuring the circumference of each tire and comparing it to the other tires? If one front tire was one-tenth of an inch smaller than the other, air was added to "stretch" the smaller tire till it was the same size, and then air pressure was readjusted! They even changed the safety-wire that they had installed that morning before the practice session, so that there would be no question about the integrity of safety-wired components (which includes just about everything).

The on-board fire extinguishing system was checked, ditto the safety harness mounts and buckles. Mirrors were cleaned again, as was Mike's helmet and face shield. New sponsor decals were applied because the other new ones were blown off by the 160 mph speeds of the morning practice session.

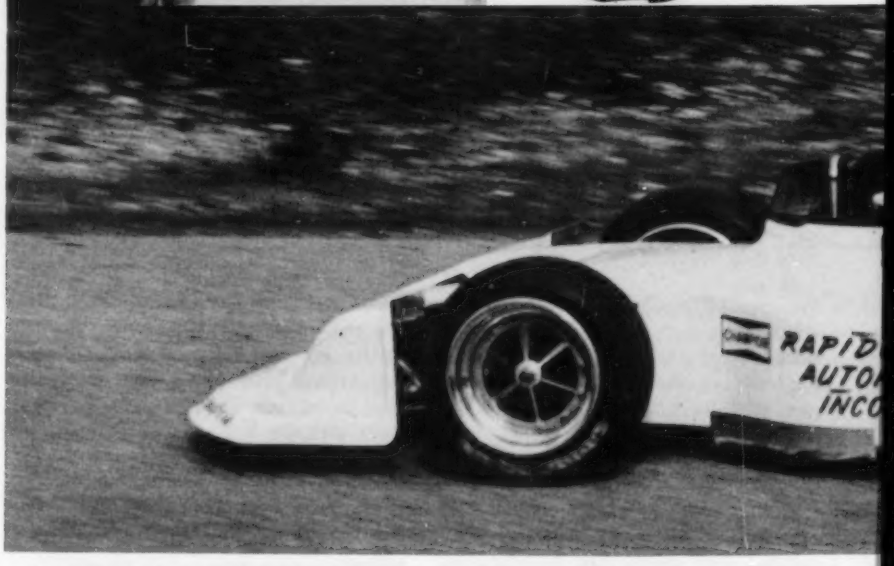
Mike does not get involved with the car or crew at this point. Rather, he spends his time in the cab of the race car transporter or in a friend's motor home. He "psyches" himself for the race, and again analyzes in his mind

text continued on page 6
photos next 2 pages

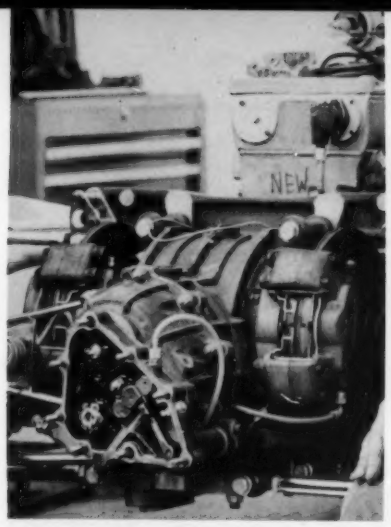
(right)
Crew chief Ralph Young puts highly treaded rain tires on the car prior to practice session on the wet track.

Engine man Gregg Lapinski uses a manometer to measure air flow at each throat of the Weber carburetors. This device assures that the carbs are synchronized so each cylinder receives an identical air/gasoline charge.

And you thought only aircraft got safety-wired parts? Every bolt and nut not secured by locking compound gets safety-wired. Even the differential lube drain plugs get the treatment!

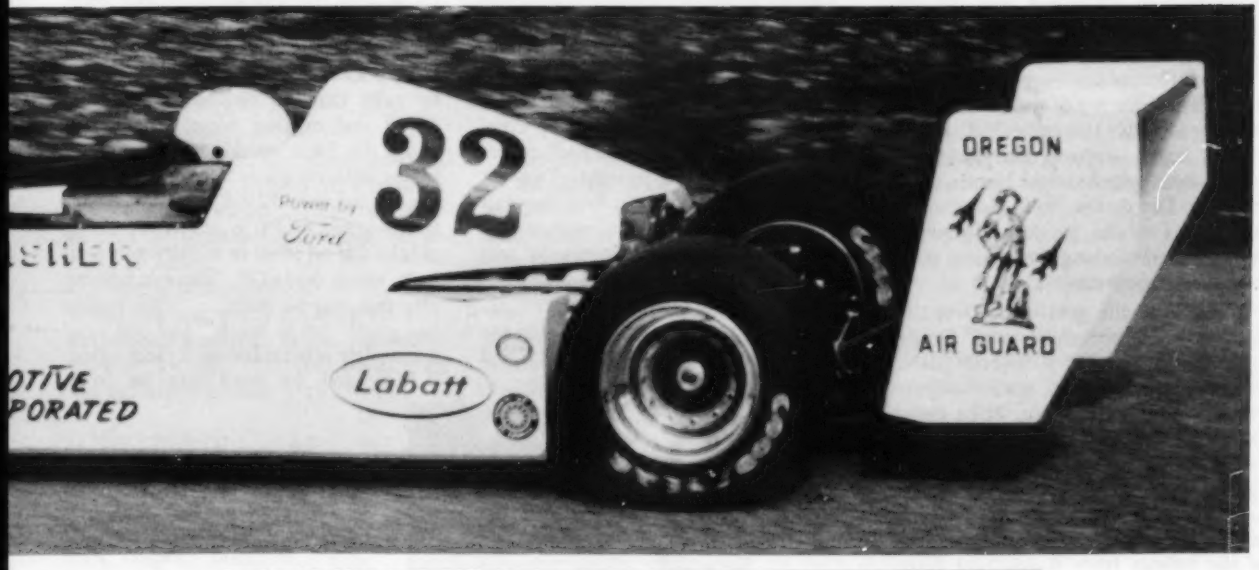


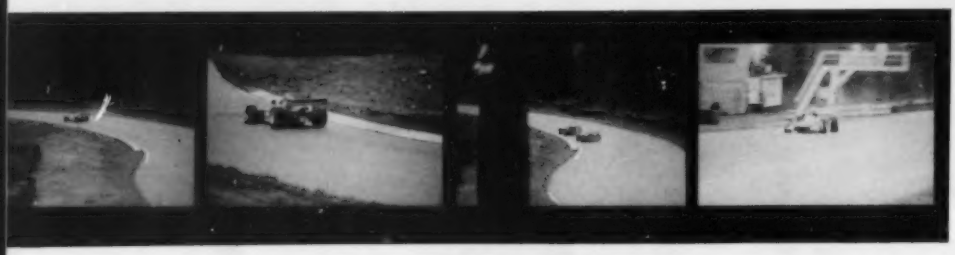
The Rapido Automotive March 78B is powered by a Ford Cosworth BDN engine. Its 1600cc's produce over 200 horsepower.



Combination transmission/rear axle, known as a transaxle, offers easy access to gears so rear end ratio can be changed quickly as race course conditions dictate.

(right)
Car owner Earl Chiles talks to Mike during Friday practice session. At 160 mph, sponsor decals and numbering get ripped off easily. Also notice front wheel lip spoilers are in the "up" position, creating more down-force on the front wheels for better traction in the rain.





what he is going to do in the event of a mechanical failure or driving error at any point on the track. We began to realize he was serious about the amount of concentration necessary to race . . . he had the same look on his face that we've seen on pilots just before a mission in Viet Nam.

The other classes began their races, but even with the sound of screaming engines hovering over the pits like a cloud, the crew continued their unhurried pace of check, recheck, and final check. Then, about 30 minutes before the Formula Atlantic grid time, they ceased activity. They conferred with Earl Chiles, the car owner, in an out-of-the-way corner. Talking in hushed tones, despite the noise, they began to rehash pit strategy and procedures, signals, and even gave a little consideration on where to hold the victory party . . . no lack of confidence or enthusiasm on the part of this crew!

With 10 minutes to go before the start, Mike came out of the motor home grinning broadly. His crew chief, Ralph Young, began strapping him in the car after checking the fit of the Nomex driving suit. The double-layer Nomex fire suit is one of the greatest life-saving devices to come along, and it's so good that pilots now wear it.

The call to the grid came over the loudspeaker, and engine man Gregg Lapinski fired up the Cosworth BDN, checking oil pressure, water temperature, and oil temperature. Mike eased the March out of the pit and onto the track. The cars were gridded, or placed on the track, according to qualifying times, and the crews withdrew to the safety of the pits. A final slap on top of the helmet from Ralph told Mike that the car was as good as he could make it, and now it was Mike's turn to go out there and do his best.

There is a phrase in racing that says "when the flag drops, the BS stops" and while it's not a really polite phrase, it certainly is accurate. The flag dropping is a signal that here, on the track, is where the entire effort of crew and driver comes together . . . it seems to say "it's now or never."

The entire field moves off as one for the pace lap. Once around the track and the pace car drops off at the beginning of the long pit straight, the cars gather speed, and the green flag waves brilliantly from the starters stand. The sounds we've heard during practice gather into one rolling clap of thunder-like noise, and 30 cars with 6,000 collective horsepower hurtle down the pit straight and into the first turn. Mike maintains his position on the straight, goes low into the first turn and puts the move on the car in front . . . he's now in twelfth place and not one full lap has passed!

One lap into the race, there is a bad accident on the back straight. We can't see what happened, and all we know is that yellow flags are out all over the course and the ambulance is moving, so someone could be hurt. Every crew strains to see their car as the pack comes slowly onto the pit straight. Two pit crews are disappointed as their cars fail to appear, the pit crews exchanging worried glances. Mike comes by and gives us the "thumbs up" sign meaning everything's OK with number 32. For seven laps, the pace car leads the field. Then, the pace car drops off and the green is out again.

For the next half hour, all goes well. Mike is steadily moving up in the field, and the car sounds strong. Gregg, the engine man, is still worried about the rented engine, but it still seems to be OK. We get word that the two racers involved in the accident on the back straight are OK, but their cars were totally destroyed. We are reminded of the time A.J. Foyt went for a wild, 12-flip-ride at Talladega and emerged unhurt, commenting about the effectiveness of the roll bar/safety belt combo.

Then, on the 65th lap, about two-thirds of the way through the race, the engine man, Gregg, notices a puff of smoke from number 32's exhaust pipe. Gregg's shoulders sag and he slowly shakes his head. "Be lucky if he goes three more laps," he says dejectedly. He knows the smoke tolls the death knell for the rented engine.

One lap later, Mike is in the pits and talking to the crew. From the cockpit, he yells that the engine is down on power and making noise. He doesn't know it's been smoking, and judging by the look on his face, if will counted the engine would heal itself and begin to run again. But it is not to be. Gregg checks the oil level in the dry-sump oil tank, and it reads OK. There is nothing else that can be done . . . the engine has gone "out to lunch" and will need a complete rebuild before it races again.

Mike gets the word from his crew,

Captain Mike Fisher is the Chief of Safety for the 142nd Fighter Interceptor Group, Air National Guard, Portland, Oregon. He's also an instructor pilot as well as a first-line pilot. Mike was born in Hollywood, California, and began racing at the age of 17. He campaigned Corvettes for a season, then moved on to a Lotus 18, a Lotus 27, and then

During the opening laps of the race, Mike Fisher leads eventual race winner Keke Rosberg. *photo by Richard Scott*

Mike dons his Nomex driving hood. His entire driving suit is made of double-layer Nomex, a flame-retardant fabric that can offer a driver almost two minutes of protection from direct flames. Those minutes can make the difference if a car crashes and catches on fire.

photo by Richard Scott

unbuckles and climbs slowly out of the car. He looks like all his Christmas packages were empty . . . a cruel trick to play on someone who wants something so badly.

There is nothing else to do but stand in the pits and watch the eventual winner, Keke Rosberg, in the number 4 car, go by until the checkered flag has the mercy to fall.

The crew pushes the broken car back to the garage area and beings to load up for the long drive back to Portland. The mood is not quite as depressed as you would imagine. Although all the work was for nothing as far as this race was concerned, they have still served notice to the other racers that Mike and number 32 are to be reckoned with in the future. They know that the car handles well, that the driver's skills are up to the task, and that if the rented engine had not gone sour the outcome would have been excellent for a new car's first race.

Mike has gotten over the first pangs of disappointment and is philosophical about the loss. "With two months to go until the next time we race, Gregg will build an engine that'll stay together, and we'll be 100 percent competitive . . . we'll get 'em next time."

Next Time: We here at DRIVER believe that Mike will "get 'em" next time, too. Those aren't just the words of a disgruntled driver trying to make excuses . . . we believe they're a statement of fact. With the entire show being under their control, the attention to detail that we witnessed, and the enthusiasm and devotion that the crew and driver show, we're sure that sometime this summer, we'll get a phone call solemnly telling us "in the tradition of the Air National Guard at the William Tell Weapons Competition, Capt Mike Fisher takes great pride in saying . . . We Got 'Em."

We'll keep you posted . . .

---

a Porsche 906. During the years 1963-66, he raced in the nationwide USRRC race series and chalked up more than a few wins. In 1967, he became the youngest American to race in Formula One Grand Prix racing, at age 24, taking a Team Lotus car to 11th place in the Mosport, Canada, Grand Prix. At the Grand Prix de Mexico in that same year, he was rewarded for his efforts with a broken car on the pace lap, a victim of a failed 5-cent fuel pump shim. Mike then made his decision on racing vs. the Air Force, chose the Air Force and pilot training, and hasn't looked back since. Mike hopes to move into the long-distance racer ranks soon, where he feels his capacity to concentrate, coupled with the capability to turn extremely consistent laps, will see him a winner in that field of racing. He likes endurance racing so well, as a matter of fact, that he has already been able to take a Porsche 906 and beat factory-sponsored Porsche Turbos by 14 laps in one 12-hour race.

WRECKED

Or how to drink so you won't plaster yourself all over the road

by
JERI ROOD
Feature Editor

Smashed, sloshed, blitzed, bombed, sauced, soused, pickled, plowed, plastered, canned, lit up, fried, high, tight, stoned, mashed . . . We seem to have more colloquial expressions for being drunk than for any other condition. Is that because we think more about it, or we're in that condition more often, or just because we think it's funny?

Funny, it isn't. Here's a true example of the effects of drinking combined with the automobile.

The sergeant and his friend left the party early, but not early enough. They were both drunk, and they knew it. Home was about sixty miles away from the quiet town where they'd spent the last few hours, so they decided to get on the road. They rolled down the highway at around 70 mph for a mile or so without passing another car – it was one a.m. and most people in that rural area had sacked out long before.

In the distance, they saw headlights approaching. "Hey!" said the sergeant's friend. "They're coming right at us! We're on the wrong side of the highway!"

It was a divided highway, and they had mistaken an access road to their left for the northbound lanes. But *they* were in the northbound lanes going south. They drove to the left side – what was the right shoulder for the cars traveling in the proper direction – and stopped. When the two cars had passed they turned around and drove back to the nearest off ramp and got back on the right side of the highway. Then they drove on toward home, without further mishap.

The only funny thing about that incident is that they didn't get into a head-on collision. And that's funny-strange, not funny-amusing.

They made several mistakes: One, drinking too much. Two, getting in the car in that condition. Three, entering the wrong side of the highway. Four, continuing, after they realized their mistake and corrected it. The fact they were able to "arrive alive" is due as much to luck as to anything else.

The sergeant had a habit of saying "I drive *better* when I'm drunk!" His friend rarely rode with him after that.

It's that kind of attitude – "I drive better when I'm high" or "I don't feel a thing; I'm okay" – that leads to accidents. Fact is, any time you use alcohol – or any drug, for that matter – you lower your efficiency.

Lowered efficiency when you're driving equals accidents. During 1977, Air Force people were involved in 164 fatal accidents where alcohol was a factor. There were 182 deaths, 73 of them Air Force people. In 63 of the 164 accidents, an Air Force driver was under the influence of alcohol.

We're going to tell you a few things about the way alcohol affects you, and

Look different, don't they? Don't let that fool you. You can get just as high off beer or wine as you can from a shot of whiskey or a martini.

we're going to throw cold water on what may be some of your favorite misconceptions about drinking.

Past The Teeth and Over the Gums . . . Alcohol affects everyone who uses it. Everyone. Some people may be able to consume more than others, and some may not show its effects as much, but all are affected.

How are people affected and what are the factors that determine how much they're affected?

Let's take it from the top . . . or rather the middle, specifically the stomach, where the alcohol is first introduced into your bloodstream. Alcohol, unlike other substances, is not digested in the intestines. It goes from the stomach directly into the bloodstream, which accounts for its quick action on your brain, which receives large supplies of blood. First, alcohol affects your thinking. Higher levels of alcohol in the blood will affect muscle control, and still higher levels will affect life functions, like breathing.

Authorities use the Blood Alcohol Level (BAL) or Blood Alcohol Content (BAC) to measure your degree of intoxication. BAL, or BAC, is simply the percentage of alcohol in your bloodstream. And it doesn't take much, percentage-wise, to intoxicate a person.

With a BAL of between .01 and .05 – that is, between one and five *hundredths* of one percent – most people will be pretty near normal, but with some loss of restraint and concentration. Between .05 and .10, their judgment is affected, as well as vision.

At BAL .10 coordination is affected and the person is *legally* intoxicated. (In some places you're legally intoxicated at lower BAL.) We emphasize

continued

One's body weight will be a major factor in determining how much he can drink without becoming intoxicated. The heavier the person, the more alcohol he can safely consume. But don't think drinking a lot makes you a "real man"—anyone who thinks that, turn in your keys and go back to toy cars.

W/ YER DARN RIGHT I CAN DRIVE! W/ FALL-DOWN AND HIC HIC
TRIPLE VISION W/ FALL-DOWN AND HIC
DOUBLE VISION W/ HIC
HIC
GIGGLE
HO HUM
the FATSKINNY
HOW DRUNK CAN YOU GET ON one drink
SCALE OF SMASHED

"legally" because the person may be too affected to pilot a car at lower levels of blood alcohol, and accidents do happen to people at lower BAL than .10%.

By now you're wondering how long it takes to reach the level of legal intoxication. That'll depend on several factors: The amount you drink, your body weight, whether your stomach is empty, and the length of time spent drinking.

It doesn't matter how much coffee you drink; it won't help you to sober up, just wake up. There are many myths about what will bring you down off a binge, but they're all just that—myths. Only time will cure the damage you've done with elbow bends.

Amount: The more you drink the drunker you get. That's obvious.

Body weight: The more you weigh, the more you can drink before you become intoxicated.

Stomach: If your stomach is full, the food will slow the rate at which alcohol is absorbed into the blood.

Drinking rate: If you drink a lot of alcohol in a short time, you'll get drunk faster.

Drying Out: *All* that may be obvious to you. You get drunk when you consume alcohol at a faster rate than your body can handle it. Here's where the interesting part starts. Although you can, within limits, control the rate at which you become intoxicated – by drinking slower, eating beforehand, etc. – you cannot control the rate at which the body gets rid of the stuff.

You see, the process of getting the alcohol out of your system is handled almost entirely by a marvelous little organ called the liver. The liver oxidizes – that is, burns off – 90 percent of the alcohol you put into your body. The remaining ten percent is expelled by sweat, breath and urine. And the Blood Alcohol Level drops only .015 percent per hour, no more.

What that means is that if you're at BAL .10 and you stop drinking for three hours, your Blood Alcohol Level will drop to .055, still considered "impaired." If you drank slowly enough to avoid raising the level above .015 in an hour, you wouldn't get drunk.

For a guide on how much you can drink in what amount of time, we've printed a table on page 13. Find your weight, and the number of drinks and you can see your Blood Alcohol Level. Such things are general guides only, however. Most people will fit into the mold, but some, for instance those with little tolerance for alcohol, will become intoxicated sooner.

If your body is hinting to you that you're not at your best, listen to it. Loss of coordination, like our friend here is suffering, can mean disaster behind the wheel.

Myth-Information: But getting back to that process of removing the alcohol from your system: There are a lot of misconceptions about sobering up. We said we'd blow holes in a few myths, so this is as good a time as any.

Coffee. A good drink for a wake-me-up in the morning. And a lot of

A true friend won't allow his buddy to drive himself home when he's not in good condition. It might be just gentle persuasion—"Hey, why don't we stay here awhile and talk"—or it might go all the way to taking the guy's car keys—"Come on, Joe. Give me the keys and I'll drive."

Our friends here are endangering not only themselves, but other people on the road. They are in no condition to do anything but sleep.

people think the stuff will sober you up in a hurry. Wrong. That's like saying Black Russians won't get you blasted. A drunk who guzzled a few cups of the brew of Juan Valdez would only become a wide-awake drunk, not sober. Of course he might drink it for four hours or so and sober up, but then it'd be because of the time, not the coffee.

Coffee will not affect your liver's ability to eliminate alcohol from your system. Your liver will just plug along at the constant .015 rate. The same rule applies to things like exercise and cold showers. If you like 'em, great. But those methods will not sober you up any faster.

Let's go on with a few more myths. A lot of people will tell you "I know when I've had enough." You notice they tell you that when they're having difficulty standing upright. You may have some idea when the drinking will affect your driving, and maybe not. If the signs are as obvious as difficulty in concentrating or focusing your eyes on an object or bad coordination, you know your driving will be off.

However, your own judgment is not always the best measure of your ability to drive safely, because one of the things alcohol will affect early is your judgment. You may *feel* all right, but be prone to accidents. And we're not talking about falling-down drunk, either. Your ability to drive safely is affected long before you reach that stage. It's better to use charts like the one in this article, and to decide on a limit *beforehand*.

"I drive better when I'm drunk." If our sergeant friend really *did*, imagine what he'd be like when he was sober! Again, alcohol affects your judgment, so you think you're driving better. Because alcohol relaxes them, people think they drive better, but it also slows reaction times and impairs coordination.

And just a rew general myths:

"Alcohol is a stimulant." We've seen a lot of people who've "stimulated" themselves right to sleep, so we don't believe that one, either. Alcohol is a depressant.

"Alcohol is a sexual stimulant." Now, that one is really laughable. Alcohol breaks down inhibitions and therefore stimulates your *interest* in sex, but it also kills performance.

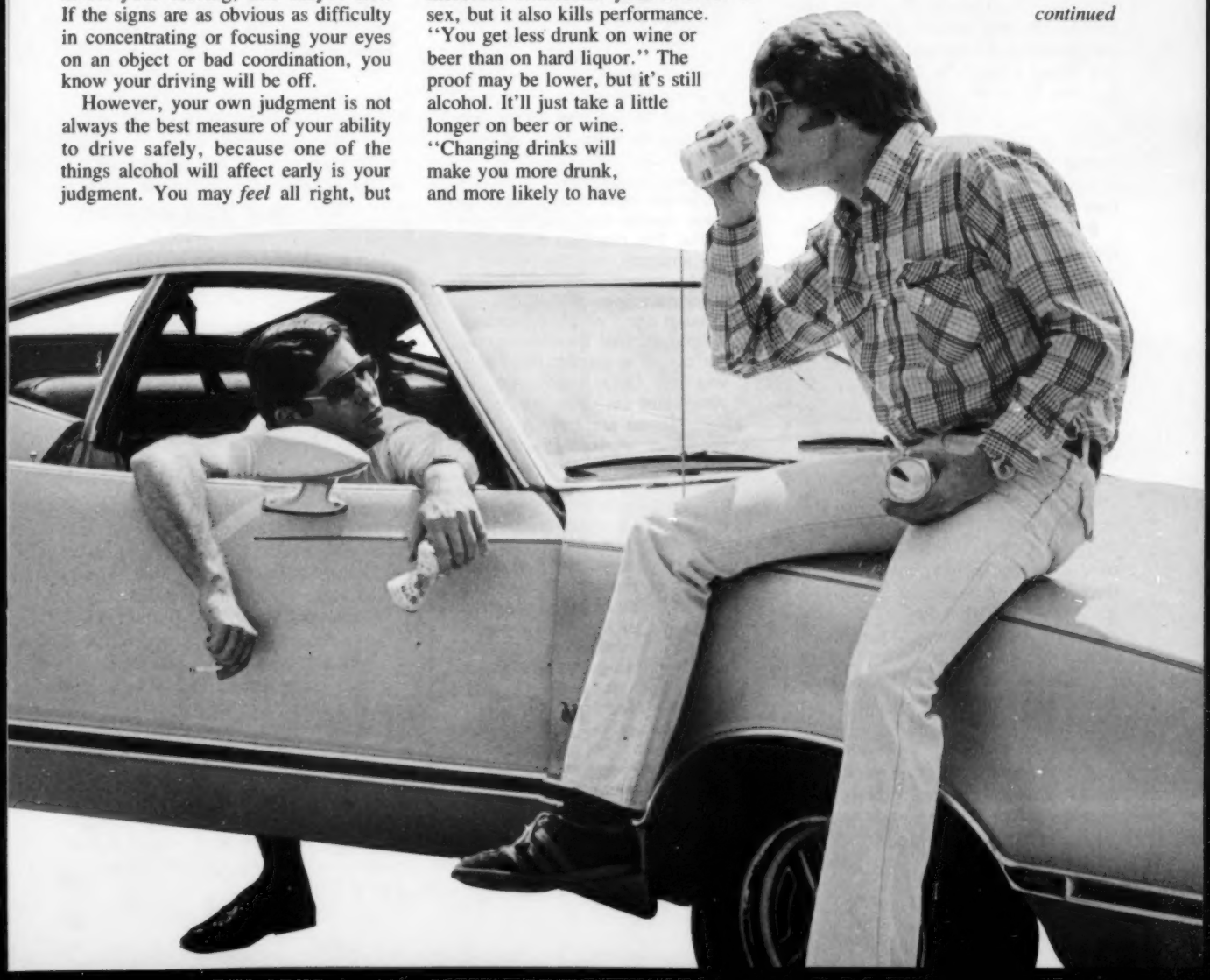
"You get less drunk on wine or beer than on hard liquor." The proof may be lower, but it's still alcohol. It'll just take a little longer on beer or wine.

"Changing drinks will make you more drunk, and more likely to have a hangover." What'll make you more drunk and more likely to be hungover is drinking too much, no matter what you drink.

Are you getting the idea? There is more misinformation flying around about alcohol than real facts. But we don't want to preach at you, and we're not trying to make teetotalers out of all our DRIVER readers.

Alcohol + Autos = Accidents: It's when the drinker becomes a driver too that we begin to worry. A recent study by the California Highway Patrol revealed that in accidents the CHP handled in a given month 14.46% of the drivers had been drinking. Broken down by age, in the 16-18-year-old group, one out of eight had been drinking; in the 18-to-20 group, better than one in seven had been drinking; and in the 21-to-29 age-group, it jumped to almost one in five. For the over 30s, it dropped back to one in eight.

continued



And studies consistently show that alcohol is a factor in about half the fatal auto accidents, nationwide.

Doesn't look too good for the young guys, does it? What it may mean is that young people like to drink more, we don't know. Fixing blame is not important to us. Helping you to drive the car safely *is*. So we'll give you some hints on how to avoid getting drunk in the first place, and what to do if you have a little too much.

Say you're going to a party where there will be drinking. If you go with friends, the best method is to designate one person as the driver. He will drink soft drinks or straight orange juice and that way be in shape to pilot.

If you're going by yourself, *you* might consider not drinking. Some people don't like to see a person not drinking at a party, sure. But that's their problem, not yours.

But if you are going to drink, there are some rules you should stick to, to control the drinking and insure your ability to drive. First, eat something beforehand, or eat along with the drinking. Alcohol is not absorbed so quickly into the bloodstream with food in the stomach.

NICE AND EASY DOES IT

Drink your alcohol slowly and at your own speed, don't try to keep up with someone else. Remember what we said about the body's ability to handle the stuff – .015 BAL per hour. That may equal about one drink per hour, or less, depending on your weight and the strength of what you're drinking. Keep that strength in mind – a double hits a lot harder. Give yourself time to handle the liquor.

Remember that alcohol mixed with a carbonated soft drink may affect you quicker.

Set a definite limit on the amount you'll consume, before you start to drink. Your judgment will be affected by the alcohol, like we said, and you may have trouble knowing when you've had enough. Stick with the limit, or below it.

HEAVY BREATHING

How about an easy way to take a breath analysis of your degree of intoxication, without the benefit of the law authorities? That's what the Automotive Information Council mentioned recently. A coin-operated machine is in existence that can be purchased by bars (or whomever) to test drinkers for blood alcohol content (BAC).

It works like this: You insert a coin and blow through a throw-away plastic tube into the machine. The machine automatically analyzes your breath and a display board gives you one of three messages: "Don't Drive!", "Take It Easy!"or "You're Okay!"

Sounds like an interesting toy, but not as good as Pub Pong, you say? Could be this kind of thing could save you from losing your license and getting a DWI charge, or worse. If you thought your performance was marginal, you could test yourself out. If you blew the test, big deal. You could order a cheeseburger and fries, drink some coffee and wait a while before testing yourself again. Remember, it's *time* that counts. You'd be much easier on yourself than the police would. After all, nobody's asking you to stop drinking; just don't drive at less than your peak efficiency.

These machines are pretty scarce as yet, because they cost around $800, but they could become more popular.

Not a bad idea at all.

When you stop drinking, allow yourself time for the body to rid itself of the alcohol. Remember, although .10 BAL is "intoxicated" and .05 is "impaired," lower levels of alcohol can reduce your ability enough to cause an accident.

If you see any signs in yourself that show you've had too much, wait a while and stay where you are. Maybe even spend the night. Or have someone else drive you home, if they're in the proper condition. Don't assume a lack of any signs of drunkenness means you're okay. The weight chart is a better measure.

Besides your tolerance for alcohol (generally determined by your body weight) and your experience with drinking, there are other factors that will determine how alcohol affects you. If your mood is low, or you're very tired, it's a bad time to do any serious drinking.

A situation you may sometimes encounter is a friend having too much while you're sober. In that case, you'll want to protect your friend as best you can. Try convincing him he shouldn't drive. That may not be easy, but it's worth the effort. Convince him to stay until he's straight enough to drive safely, or offer to take him home yourself.

If it's *your* party, this could be very important. The Supreme Court of California has ruled that the host can be held liable if he serves liquor to an intoxicated person and that person later injures someone. We don't know whether this ruling will become widespread across the country, but it might. So a good host doesn't let his guests leave drunk, and a wise host won't leave himself open to legal action.

And a wise drinker is a responsible drinker – one who drives only when he can do so safely, not when he's so drunk he gets on the wrong side of the highway. Drinking may be your idea of fun, but drinking and driving is just plain dangerous.

Drinking *while* driving will earn you citations and a trip to the police station . . .

. . . and how about a ticket for littering, too?

This table approximates the Blood Alcohol Level to be found after a certain number of drinks. Find the weight closes to your own and the number of drinks you can have before you are legally under the influence. The figures here are averages—average people, the "average drink," etc. BAL figures for more potent drinks will be higher than those listed here, and so will BAL for drinking on an empty stomach. Use this table to set a limit on the number of drinks you can have safely, and remember all the other factors listed in the text of the article.

(Table courtesy American Automobile Association)

BAL TABLE

	1 Drink				2 Drinks				3 Drinks				4 Drinks			
After Hours	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1
Weight pounds																
80	—	—	—	.02	—	—	.05	.08	.07	.10	.10	.10	.12	.12	.15	.15
100	—	—	—	.02	—	—	.04	.06	.05	.07	.08	.09	.09	.10	.12	.13
120	—	—	—	.02	—	—	.03	.04	.03	.04	.06	.08	.06	.08	.09	.11
140	—	—	—	.01	—	—	.02	.04	.02	.03	.05	.06	.04	.06	.08	.09
160	—	—	—	.01	—	—	.02	.03	.01	.02	.04	.05	.03	.04	.06	.08
180	—	—	—	.01	—	—	.01	.03	—	.02	.03	.04	.02	.04	.05	.07
200	—	—	—	—	—	—	.01	.02	—	.01	.03	.04	.01	.03	.04	.06

	5 Drinks				6 Drinks				7 Drinks				8 Drinks			
	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1
Weight pounds																
80	.17	.17	.19	.20	.19	.22	.22	.25	.25	.27	.27	.30	.29	.30	.32	.33
100	.13	.14	.16	.17	.16	.18	.19	.21	.20	.22	.23	.25	.24	.25	.27	.28
120	.09	.11	.13	.14	.13	.14	.16	.17	.15	.17	.19	.20	.19	.20	.22	.23
140	.07	.09	.10	.12	.10	.12	.13	.15	.13	.14	.16	.17	.15	.17	.18	.20
160	.06	.07	.09	.10	.08	.09	.11	.13	.10	.12	.13	.15	.13	.14	.16	.17
180	.04	.06	.07	.09	.06	.08	.09	.11	.09	.10	.12	.13	.11	.12	.14	.15
200	.03	.04	.06	.08	.05	.07	.08	.09	.07	.09	.10	.12	.09	.10	.12	.13

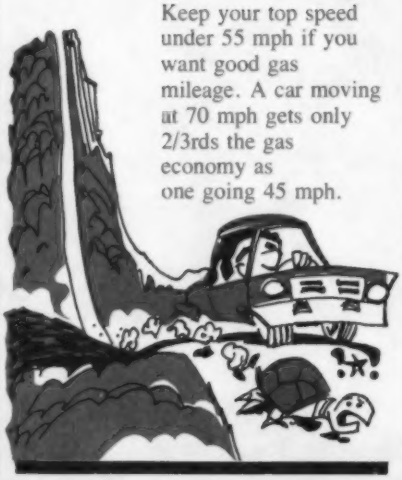
Numbers equal the percentage of alcohol in the blood. Dash (—) a trace of alcohol.

MORE

Gasoline economy isn't something that can be bolted on a car. There is no simple, magic formula. Driving and parking techniques; how, when and where to buy gasoline; practical and workable gas saving additions and options; fuel conserving alterations, adjustments and inspections – all these play a part in improving gas mileage. However, you the driver are the single most important factor. Only you can make the decision for economy and adhere to the necessary discipline it requires.

Here are some tips that can send you on your way to becoming an expert economy driver:

SLOW DOWN!



Keep your top speed under 55 mph if you want good gas mileage. A car moving at 70 mph gets only 2/3rds the gas economy as one going 45 mph.

ANYTIME

the engine is running and the car isn't moving, you're wasting gas.

■ Before getting into your car look around. Check in front, in back and to the sides of your vehicle.

■ Before you start your engine make sure you are ready to go. Adjust seats, light cigarettes, put packages in the back seat, strap the kids in and do what you must do before you turn that key.

■ Turn the engine off rather than let it idle if the idle time exceeds 30 seconds.

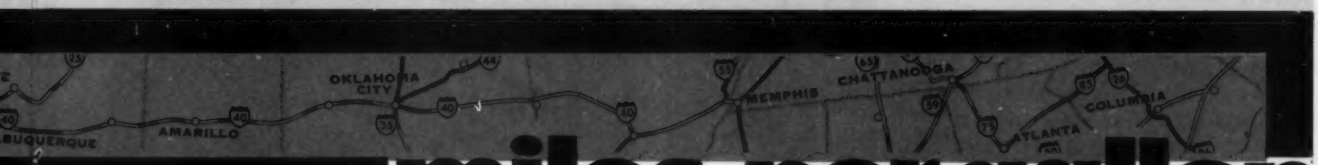
■ Any time you use an accessory you use extra gas. Radio, tape deck, cigarette lighter, power seats, power windows, interior lights, heater and blower fan, all use electrical current. When one of the accessories is used, the alternator/generator is activated to restore to the battery what is being drawn off. This extra work of the generating unit is paid for with gas burned to provide the additional horsepower needed to turn the unit. Use accessories sparingly.

■ Roll up power windows before stopping the car. This prevents running the engine while waiting for the windows to roll up. A small item to be sure, but it saves a few seconds idling time.

■ Remember to turn off the air conditioner whenever you park the car. This will save a few drops of gas when the car is restarted because the engine won't have the extra drag of the compressor lowering cranking efficiency.

■ Don't tailgate! Much gas is wasted by driving too close to the car ahead. You must constantly brake and accelerate, brake and accelerate. By tailgating, you let the car in front dictate how you

by BOB SIKORSKY



miles per gallon

drive – and that is foolish economy. Stay a safe and reasonable distance behind the other car and you won't have to play the slow-and-go game. It's murder on mileage. Keep smooth, even accelerator pressure and pace yourself so that you are not continually slowing and stopping in cadence with the car in front.

■ "Drive ahead" and you see traffic situations developing and are better prepared to cope with them. You avoid needless slowing and stopping, and conserve critical momentum. "Driving ahead" is also equated with safety driving because you are more aware of the traffic in front and to the sides of your car and react to it more wisely.

■ Avoid driving on wet roads unless necessary. The car must put forth extra effort to "push" itself through the water on the road. You can lose 1 mpg on wet surfaces. Government researchers on fuel economy recognize this fact and terminate any economy tests "if the pavement becomes damp enough that the car leaves visible tracks."

■ It's much easier and more economical to do difficult maneuvers such as parking when the engine is warm rather than cold. Steering gears, wheel bearings, transmission and differential also work better when their respective parts are warm and more fluid. It's good sense when leaving your car overnight to park it in such a way as to make leaving in the morning easy. Do all backing, turning and other maneuvering while the engine is warm and using less gas. You'll save a lot with this one technique because you ease the strain on the engine while it is most vulnerable.

DON'T

drive a car with one foot resting on the brake pedal. This is especially important on cars with power brakes where the slightest pressure will engage the brakes. Don't force the car to fight itself – keep your foot off the brake.

■ Whenever you purchase a new set of tires don't have them balanced right away. New tires should be driven a few hundred miles so they can acquire a "set," each tire conforming to its own particular traits. If no balance weights are present to affect the tire during the break-in period, the set will be truer. Drive a few hundred miles on the unbalanced tires, and then have them balanced – it will be more accurate and longer lasting. You will gain many extra miles of tire wear, and economy will improve because the tires generate considerably less rolling resistance.

■ Front wheel bearings should be cleaned and repacked with proper grade lubricant at least every 10,000 miles. Wheel bearings are a critical point at which the moving wheels meet the stationary car frame – an area of extreme friction build-up. They must be clean, well-lubricated and free of "burns" or pits if friction is to be minimized. A bad bearing can usually be detected by a loud intermittent rumbling coming from one of the front wheels. It should be replaced immediately.

■ You can get better mileage by shortening the carburetor accelerator pump stroke. This is done by moving the accelerator pump rod end to a different hole so that it shortens the pump stroke. This lessens the amount of gas pumped into the carburetor each time the accelerator is depressed. Expect a slight reduction in top speed with this easy adjustment.

■ Maintain engine oil at correct level. The engine needs all the friction-fighting protection it can get. Low oil level won't provide adequate lubrication, and engine efficiency will drop. Keep the oil *full*.

■ Improper front-end alignment can cost you an extra one to two gallons of gas per tankfull. Bad alignment can cause the car to "pull" heavily to one side or the other, or it may force the front wheels to turn in and literally "plow" the road. A car with bad alignment will want to go one way while the wheels try to go another. This constant battle between forward movement and drag created by the misaligned wheels costs you more than just gasoline, because tire wear is dramatically hastened.

continued

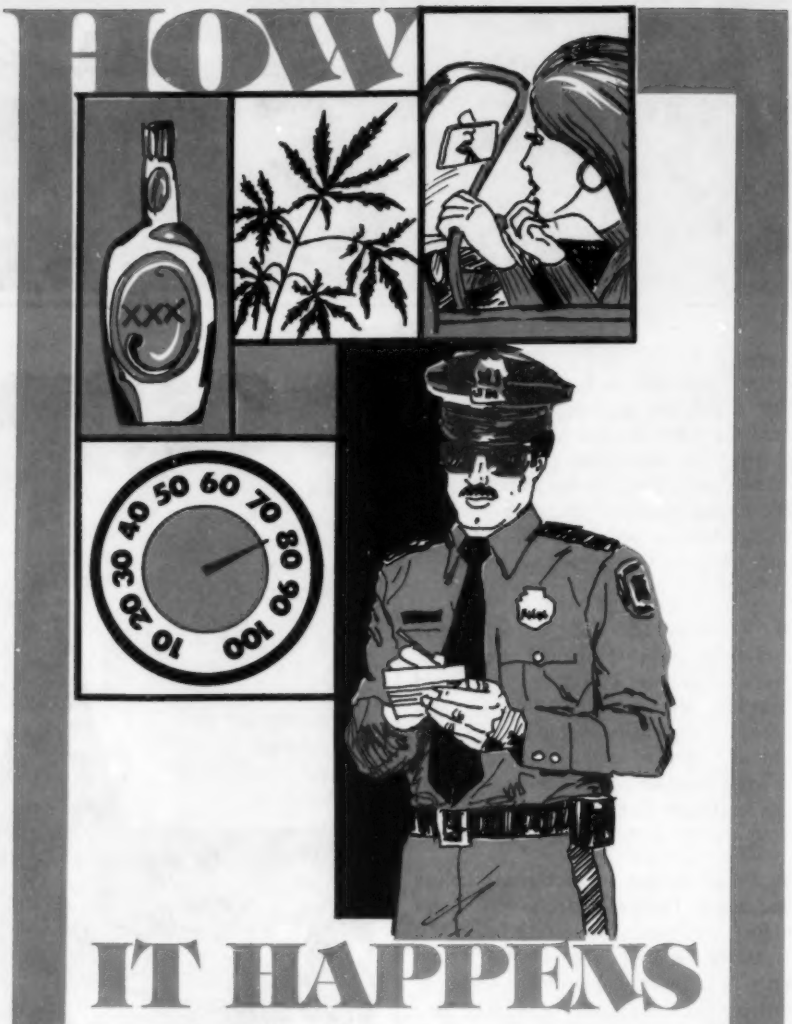
more miles per gallon
continued

■ Correct coil polarity is essential if you want top economy. This often overlooked symptom can cause very rough engine performance and mileage loss. A coil with "reversed," or positive, polarity requires up to 50% more voltage to fire a spark plug and places a tremendous burden on the ignition system. If you suspect reversed coil polarity have it checked at a garage or do it yourself by removing an ignition wire from one of the spark plugs while the engine is idling. Hold the end of the plug while inserting the end of a lead-tipped wooden pencil between the end of the wire and the plug. If the spark fires on the plug side of the pencil, polarity is correct; if it fires toward the ignition wire, polarity is reversed. To correct polarity simply reverse the primary wires at the coil.

■ Be certain there are no restrictions in any part of the exhaust system, from the exhaust manifold to the end of the tail pipe. Check for clogged, bent, or dented exhaust pipes, tail pipes and muffler. Any restriction in the system will cause an increase in back pressure and total performance will suffer. It is absolutely necessary that the exhaust system be free and clear.

■ A fully charged battery is a must if you are trying for maximum gas mileage. No Economy Run driver would be caught without one. A battery in top condition delivers a hotter spark to the entire ignition system, allowing better combustion. A charged battery also signals to the voltage regulator, which in turn keeps generator or alternator output at minimum, thus preventing horsepower loss. Clean terminals, sound cables, and cells filled to the proper level, all help maintain a battery at peak efficiency.

These tips have been reprinted with Bob Sikorsky's permision from his book, "Every Driver's Guide to More Miles Per Gallon," published by Better Mileage Institute, P.O. Box 4800H, Tucson, AZ 85717.



TSgt Reuben Sandwich wants to beat the rush to the lake after work on Friday. He hurries his car up the winding two-lane mountain highway at the speed limit. Finding a slower-moving car ahead, he decides to pass. "I've got enough room to make it before I get to that curve ahead," he thinks to himself. He pulls into the other lane and moves ahead to pass when a car appears around the curve coming right at him. TSgt Sandwich stomps on the brake and pulls back in behind the car he was passing, just in time to prevent a collision with the downhill car.

If TSgt Sandwich wants to pass on a winding road, he should:

1. Have his life insurance paid up.
2. Have his head examined.
3. Allow himself more clearance than he otherwise would.

Actually, it depends on the type of road he's on whether he should opt for choice number 2, but 3 is the one we were looking for. If he can see sufficiently far ahead, okay. But the more curves to the road, the more dangerous it becomes. He doesn't know what's around the next bend.

CATALYST HAZARD

This startling information appeared in a recent commercial airline safety publication.

At a safety conference held in Vancouver, B.C., an eye specialist described a hazard that could affect each of you. That hazard is the catalyst or hardener that is added to fiberglass resin before the resin is applied. The eye specialist stated that a drop of this catalyst in the eye will progressively destroy the tissue of the eye and result in blindness, unless immediate action is taken (within 4 seconds) to wash the catalyst from the eye. Furthermore, once the chemical has started to destroy the eye, there is no known way of stopping the destruction or repairing the damage.

The specific toxic agent involved is MEKP (methyl ethyl ketone peroxide). In tests using laboratory animals, MEKP in solutions of varying concentrations was found to cause eye problems ranging from irritation to severe damage. The maximum concentration producing no appreciable irritation was a solution containing only 0.6 percent MEKP. Material published on the subject indicates that washing an affected eye within 4 seconds after contamination prevented injuries in all cases, but no known chemical neutralizer has been reported. Suggested protection for catalyst users is protective glasses and the immediate availability of a source of bland fluid (such as water) for thorough washing of ocular tissues.

Reports on one experience described disastrous results . . .

The victim had both eyes contaminated while fiberglassing a chair at home. Though he did make an effort to wash his eyes out, several minutes apparently elapsed before he found water. One eye was lost immediately; the other was lost gradually over a period of about 8 years. Its deterioration was described as resembling that from WWI mustard gas burns.

The hazard associated with fiberglass resin was previously unknown to those attending the conference, although many had used fiberglass resin at home or at work. The hazard may be unknown to you who may use a similar kind of resin and catalyst when working on cars.

Before using any of these catalysts, check their chemical composition and take appropriate measures. The cost of a pair of safety goggles is a very small price to pay for the protection of eyesight.

Riding in uniform

There are two Air Force Regulations which spell out the protective equipment motorcyclists either must or may wear while riding in uniform. The first is AFR 127-5, "use of Protective Equipment by Vehicle Operators and Passengers."

AFR 127-5 is the one requiring you to wear a fastened helmet and eye protection while operating a government motorcycle or motorscooter (outdoors), or a private motorcycle on the base. It permits you to wear a leather or simulated leather jacket, but prohibits studs, stars, emblems, lettering or other decoration. It also permits you to wear the field utility jacket, clean and in good condition. Persons authorized to wear flight jackets may wear one, and the international orange side should be visible. AFR 127-5 also authorizes fluorescent/reflectorized vests and recommends reflectorized tape be affixed to either the leather jacket or flight jacket.

The Air Force Uniform Board has now concurred in adding the following safety items to AFR 127-5, paragraph 8, in addition to those above:

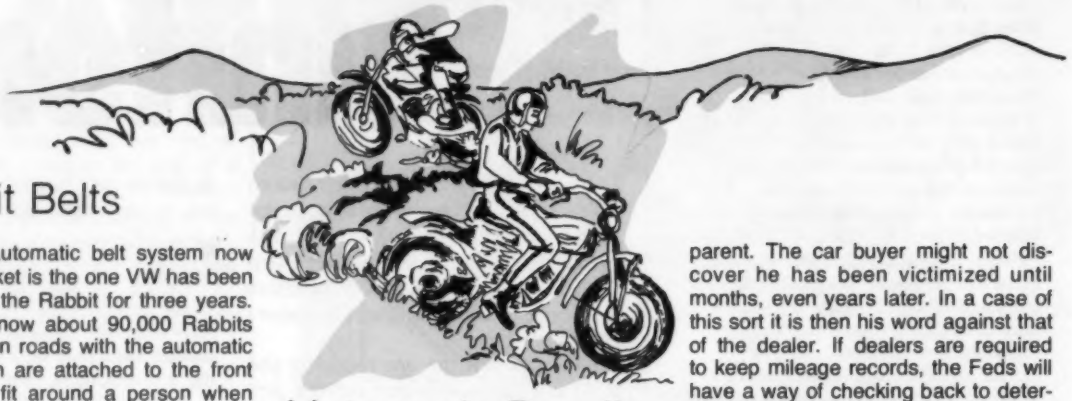
- Back pack, international orange, any conservative commercial design and free of emblems, lettering or any other extraneous decoration.
- Rainsuits that completely cover the uniform during inclement weather (raining or an imminent threat of rain). Rainsuit may be any color, conservative in design and free of emblems, lettering, or any other extraneous decoration.
- Snowmobile suits for personnel assigned to northern tier installations when weather conditions dictate the necessity for such protection. Snowmobile suits may be worn while operating snowmobiles, motorcycles, motorscooters, bicycles and mopeds. They will completely cover the uniform, may be any color, conservative in design and free of emblems, lettering, or any other extraneous decoration.

The other regulation affecting what motorcyclists may wear with the uniform in AFR 35-10, "Dress and Personal Appearance of AF Personnel." The following will be added to AFR 35-10:

- When operating a privately owned motorcycle, motorscooter, bicycle, or similar vehicle, Air Force personnel may wear the safety items outlined in AFR 127-5, paragraphs 6, 7, and 8, with the uniform. Wear of safety items is authorized only while actually operating the vehicle. Personnel will remove these items upon dismounting their vehicles. EXCEPTION: Rain/snowmobile suits do not have to be removed until the member arrives at his/her final destination.

The traffic safety people have been working a long time to obtain these new authorizations. DRIVER urges you to follow the rules carefully.

Timely Topics

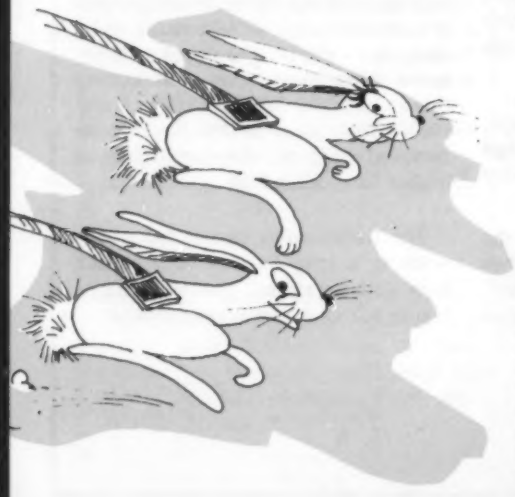


Rabbit Belts

The only automatic belt system now on the market is the one VW has been offering on the Rabbit for three years. There are now about 90,000 Rabbits on American roads with the automatic belts, which are attached to the front doors and fit around a person when he climbs in and shuts the door.

The belts have proved their worth. People who keep track of such things have announced that 79,000 Rabbits with the belts had only six fatalities in 1.2 billion miles of travel compared with 81 fatalities in 4.8 billion miles for 300,000 Rabbits with conventional belts. This means you are three times safer in the Rabbit with the automatic belts.

Of course, that last statement is only true if you're a statistician. Because IF you fasten your belt everytime, you're just as safe in the Rabbit with conventional belts. Trouble is, most people still don't buckle up.



Motorcycle Recall

National Highway Traffic Safety Administration (NHTSA) and Honda Motor Co. have announced the recall of about 1.4 million 1974, '75, and '76 Honda motorcycles because of defective fuel tank caps which can open in the event of a fall and possibly cause a fire. Recall applies to 1974 models CB550 and CB750; 1975 models CB500 and CB500T; and 1976 models CL200, CB200, CB200T, SL350, CB350F, CB350, CL350, CL360, CB360T, CB360, CB360G, CB400F, CB450.

Manufacturer will notify owners of recalled bikes as soon as parts are available.

Feds To Crack Down On Odometer Tampering

In a recent article, MOTOR Magazine noted that the Government is working on a new crackdown on the mechanics who turn back odometers in violation of Federal law. The National Highway Traffic Safety Administration is working up a regulation that would require used car dealers to keep mileage records on all cars sold for four years. If the odometer is turned back, deception is not always immediately apparent. The car buyer might not discover he has been victimized until months, even years later. In a case of this sort it is then his word against that of the dealer. If dealers are required to keep mileage records, the Feds will have a way of checking back to determine who had possession of the vehicle at the time tampering may have taken place. The mechanics who perform the tampering will be held equally responsible as the dealer, and will not be able to get "off the hook" by claiming they were only acting under the instructions from the dealer.

The current penalty for tampering with the odometer is $1,500 or three times the damages suffered by a car owner who buys a vehicle with an incorrect odometer, whichever sum is greater. Setting back the odometer may enhance the salability of the vehicle, but any profits realized from the sale may be lost in the end.

Boat Warning

The Coast Guard has issued a warning that Elite Boats model 1600T 15-foot outboard runabout does not meet safety loading and power standards.

The manufacturer, Elite Boats of Perry, Fla., is no longer in business, the Coast Guard said.

Coast Guard officials said the boat capacity label overstates its weight-carrying ability and the maximum horsepower it can use. The boats can safely carry no more than 1,156 pounds including people, motor and gear, officials said. And they added that the boat should not have an outboard motor exceeding 80 horsepower.

the Seat belt SIMULATOR...

COULD YOUR BASE USE ONE ?

by MSgt C.E. UNSWORTH
Sheppard AFB, TX

She was traveling only five miles an hour and when the sudden stop came her seat belt held her firmly in place. But the baby in her arms was thrown violently forward.

She was riding the Sheppard Air Force Base seat belt simulator and the baby was only a doll. But the woman went home convinced of the value of seat belts, even in low-speed accidents.

Thousands of people, military and civilian, have ridden the simulator since its completion two years ago. For some, the ride marked the first time they had ever worn a seat belt. Reactions have ranged from fright to very serious emotional thoughts on the use of restraints.

The Sheppard simulator had its beginnings when Colonel Robert R. Reid, commander of the 3700th Technical Training Wing (TTW), became acquainted with the idea during a visit to Keesler Air Force Base, Miss. After talking to the Safety Office there, he brought home a set of plans for a simulator he wanted to build at Sheppard. But he ran into a problem immediately when he discovered that a boat trailer, which was the basis of the Keesler plan, was not available at Sheppard.

So he turned the project over to his training aids people, who modified the plans to fit Sheppard's situation.

All the materials were purchased locally or were on hand for the construction process. Total cost of all materials was about $360. About 250 manhours were involved, costing about $2,260.

The wing uses the simulator weekly for squadron training and for Commanders Call throughout the month. The simulator is also loaned to other Sheppard units to brief their permanent party military and their civilian workers. During open house and Armed Forces Day-type events, the simulator gets a real workout as visitors to the base line up to take a ride.

The simulator was used off-base during Police Week in the neighboring community of Wichita Falls, Tex., and its use was featured on local television. The prime reaction from the public has been "astonishment." One woman who rode the trainer swore she and her children would never ride without seat belts again.

Safety Officers interested in acquiring a seat belt simulator for their base should call the 3700th TTW at Sheppard (Autovon 736-2827 or 2962).

A student at the 3700th Technical Training Wing at Sheppard Air Force Base holds on as he gets a ride in a seat belt simulator. On this device he experiences the safety of the seat belt in an automobile.

Students of 3700th Technical Training Wing at Sheppard AFB watch as a fellow student takes a ride in a seat belt simulator.

(USAF photos by Larry Jayroe)

See the oil.

basic car care

Some easy-to-do checks and a potpourri of automotive info for the new driver

We like the concept of driver education. Formal teaching of driving skills gives the new driver a better-than-average chance of surviving on the highways while he or she is building experience. For the most part, we prefer formal driver ed to the old method whereby a father or brother would teach you how to drive. That method sometimes lacked a thorough grounding in rules, regulations, and techniques and concentrated on your being able to avoid the mailbox at the end of the driveway. It was also known to cause the aforementioned fathers and brothers to go prematurely gray.

However, such driver training as was given by father or brother usually included a lot of handy little hints about what makes a car go, how to keep it going, and what to do to make sure the car had a long and happy life. Many of us who are over 30 remember that our fathers and brothers used to do the majority of automobile repairs that the family car needed, and could pass on that knowledge to us.

Today, however, the time involved in such training, as well as the cost of the instructor, makes mechanical basics take a back seat to actual driver training, and cars are now so complicated that the relatives take them to the garage instead of puttering around under the hood on a warm afternoon.

There's nothing wrong with this program, but we do feel that some of our newer drivers aren't all that well prepared to cope with the mechanical problems that can and do crop up occasionally on any car. With this in mind, we offer the following collection of basic automotive maintenance hints and easy-to-do checks that will make it easier for the newer driver to get along with his vehicle. Also, since most new drivers can't spring for a new car, they purchase an older model that is not as complex as today's auto and therefore can be easier to maintain. And, since it *is* an older car, it will usually require repair more frequently, so the knowledge is even more important.

Before you remove the spark plug wires for a tune-up, use masking tape to number the wires. It'll save you time and trouble later.

We've tried to keep the terms in this article down to a beginner's level, but there really isn't much we can do with some automotive terms, like "camshaft." So, if some of the terms or techniques confuse you, head for the library and do some light reading in a good basic automotive text, like Blanchard and Ritchen's *Auto Engines and Electrical Systems*, published by Motor Books.

When you car turns 150,000 on the odometer and is still running, or when it dies just behind the state prison on a dark night and you get it running again, you may be glad you took the time to read this little article.

Wet engine. Even California got its share of rain this year, and in some areas of the country it's wet all year 'round. When you hit a deep puddle at 20 mph, the chances are good that water will splash up and cause your engine to die.

You can prevent this by going through *any* water slowly, but if the engine does die, shift to neutral or put the clutch in, and get to the side of the road. Since you have cleverly hidden a roll of paper towels in your trunk, you won't have to use your best shirt to cure this problem. With the ignition off, take some paper towels and dry off the spark plug wires, particularly where they connect to the spark plugs.

Soak up any water on the outside of the distributor cap and then remove the cap and dry the inside surface. Wipe the rotor and points and reinstall the cap.

Many manufacturers use a simple plastic device to attach the horn ring to the steering wheel. This plastic piece breaks easily, the horn ring will fall off in your lap, and you won't have a horn. Use a piece of insulated wire from one electrical contact and touch it to a metal ground when you need an emergency horn system.

Wipe the coil dry, along with the one large and two small wires that connect to it.

Try the starter. If the engine doesn't catch, don't belabor the point . . . just let it sit for a few minutes. Residual engine heat will assist the drying process.

Often, hard starting after engine drowning is due to fuel flooding. Hold the accelerator pedal to the floor *(don't pump* it) and crank the engine. It will begin to fire on one cylinder, then on the others, so gradually let up on the pedal as the engine begins to run faster.

Chemical sprays that displace water are available from auto parts stores and work well if used according to directions, but we feel that it's not a good idea to keep spray cans stored in your car.

Clogged carburetor jet. Sometimes a particle of rust or dirt in the fuel line can clog a carb jet. Use engine vacuum to unstop the plug. Remove the large coil lead from the distributor cap and ground it against the engine. Remove the air cleaner and block off the mouth of the carb using your hand or a large piece of cloth. Don't try to seal the mouth, just block off the majority of air flow. Crank the engine, and remove the carb restriction. Reconnect the coil wire and start it up. If it doesn't start, or if there is no smell or sign of gas in the carb throat, suspect the fuel filter or fuel pump.

Broken distributor rotor. Sometimes a broken or worn-out rotor can be jury-rigged, at least enough to get you home, but this fix is for when you're really stranded. Use a paper clip or short piece of stiff wire and tape the paper clip to the rotor top so that the end just touches (or passes very near) the contacts in the distributor cap. The other end should be centered under the carbon rod that protrudes from the underside center of the distributor cap. Run the engine at low speed so that centrifugal force doesn't cause the wire to come off.

Hot-wiring. If you're the kind who would steal a car, please don't read this section . . . but if you're the kind who leaves keys anywhere but in your pocket, it may be of interest. If you have a car with a standard transmission, all you need to do is run a wire from the "positive" post of the battery to the "+" or batt" terminal on the coil, and then push-start the car. If you have an automatic transmission, you need to wire the coil and the battery in the same way, and then hot-wire the starter.

You can do this with large-gauge wire, like battery jumper cable, by running the jumper from the "positive" (+) terminal of the battery to the terminal on the starter motor OR you can jump the two large terminals on the starter solenoid OR if you have a car where the ignition switch is in the dash and not in the steering column, you can jump the connections on the back of the ignition switch marked "batt" and "st" or "start." Remember though, once it's running, you have to remove the wire from the coil to shut it off . . . you've bypassed the key.

Cleaning ignition points. Dirty or pitted ignition points can be cleaned in an emergency by using a metal nail file or emery board, or even the abrasive strip from a book of matches. Use the abrasive on both the spring-loaded and stationary sides of the point assembly. In a pinch, points can be adjusted to ballpark specs by using a match book cover as a thickness gauge.

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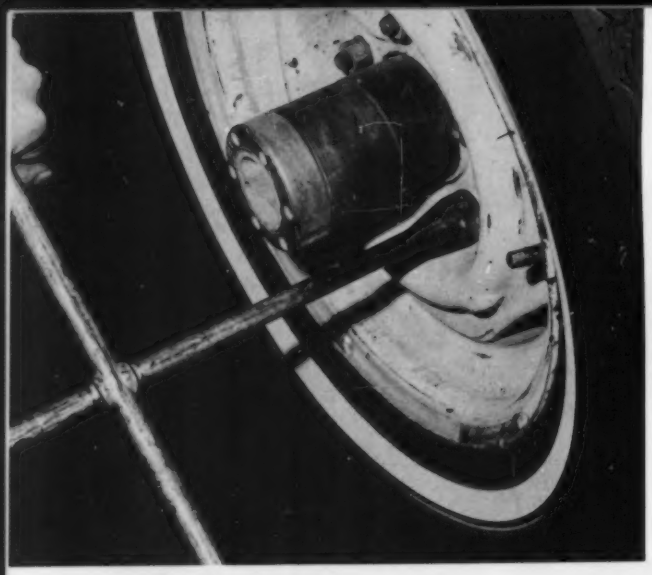

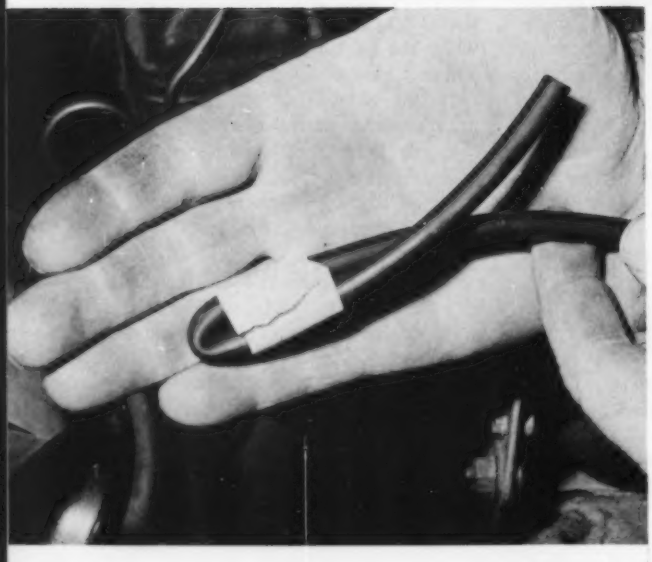

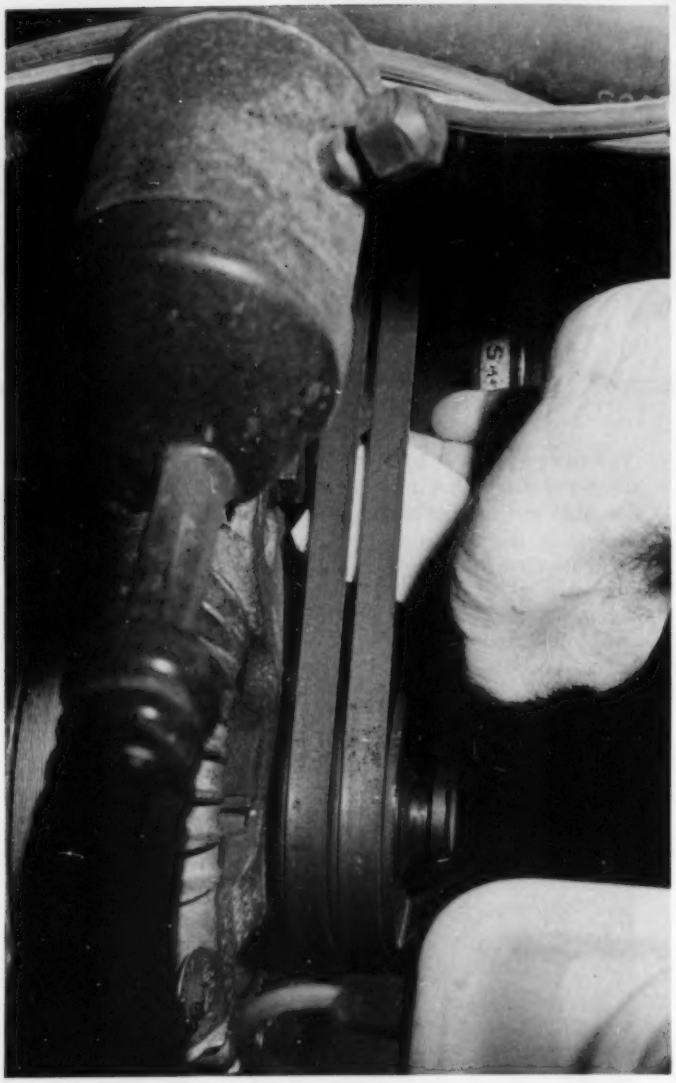

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(far left, top)
If you have a 4-way lug wrench (something we recommend), paint the tip that fits your car. It can save a bit of time and it'll prevent rounding off the lug nuts by using the wrong socket.

(far left, middle)
One place that is often overlooked as a source of oil leakage is the fuel pump mounting point. The gasket between the fuel pump and the mounting boss on the block must be intact or oil will seep out rapidly.

(near left, top)
If you have a noisy, slipping fan belt, but no tools with which to adjust it, soap applied to the inner belt surface will sometimes work well enough to get you to a service station. Should we mention that you *don't* apply the soap to the belts while the engine is running?

(far left, bottom)
If you have a vacuum line that breaks off a little short of its destination, or you have an auxiliary oil pressure gauge that uses an oil line to connect it to the engine, and IT breaks, bend the delivery end over and tape it like this. A plug will not always work as well as this simple fix.

(near left, bottom)
A loose spark plug wire can be tightened simply by crimping the metal female connector in the plug lead.

Need shocks? Shock absorbers affect your car's handling to a large degree, and if they're worn you could get yourself in trouble. Your car probably needs new shocks if:

It keeps bouncing after going over a bump or dip in the road.

It sways excessively in curves.

It seems to "float" on rough roads.

It "nose dives" during stops.

Gas mileage suddenly down? If your car has a gas tank cap that's located in the rear of the car under the license plate, check to see if the gas cap fits tightly. If it doesn't, and if you habitually fill your gas tank all the way, gas can slop out past the cap during normal acceleration. This little glitch cost one of our frugal editors 3½ miles per gallon until he found the problem.

Check cranking vacuum for trouble-shooting. Champion Spark Plug's excellent SERVICE CORNER Magazine reminds us that when trouble-shooting a hard-start or rough idle problem, include an engine vacuum test at cranking speeds.

To perform the test, make sure the carburetor throttle is completely closed, the throttle-stop solenoid is de-energized, and that all manifold vacuum lines are plugged. Plug the PCV (positive crankcase ventilation) line to the manifold, too.

Attach a vacuum gauge to a convenient vacuum source, and crank the engine. Vacuum should measure 6 or 7 inches at cranking speed. If the measured level is less, the problem could be a leaking EGR (exhaust gas recirculation) valve. Also check for leaks at carb mounting and intake manifold gaskets.

Stop oil use. Most cars "use" some oil; in other words, the oil level goes down a bit between changes. But in many cases, the car doesn't use oil so much as it *leaks* it.

A lot of leakage can occur when valve covers are simply loose. A turn or two on the valve cover hold-down bolts with a screwdriver or small socket wrench can take care of it.

But sometimes, when you've been a bad person and not changed your oil regularly, sludge has built up and clogged the oil drain holes in the cylinder head. Oil pumped up to the valve mechanism can't drain back into the crankcase and fills the valve covers. This, in turn, causes oil to flow down the valve guides and into the combustion chamber. This condition is most noticeable on start-up . . . you'll get a cloud of blue smoke that goes away quickly.

If tightening the valve cover screws doesn't stop the leak, pull off the valve covers and look at the lower corners of the cylinder head. If a quantity of oil poured out when the cover was lifted, the oil return holes at the bottom of the head may be clogged.

Take a piece of wire coat hanger and poke out the passages so that oil may flow back to the crankcase.

Replace the old valve cover gaskets with new ones, reinstall the valve covers, and you're back in business.

Oil can also leak from: the oil pan drain plug, the oil pressure sending unit base, the fuel pump mounting base, or the oil filter gasket. Check these items out if you're still plagued with excessive oil use.

Spare keys. If you don't want to try the old "hot-wire" trick, or if your car has a steering column-mounted ignition switch, the Automotive Information Council recommends that you get a professional locksmith to make a new key for you. The price for a good locksmith is about $35, while the cost of a new steering column is about $200. Moral: don't let your good buddy fool with steering column ignition switches . . . it can cost you a bunch of bucks.

Car repair costs. According to an article in *Automotive News*, a private firm that sells extended automobile warranties has compiled a list of the most- and least-expensive-to-repair cars. Top five on the list (least expensive) for foreign and domestic autos are as follows:

Domestic	Foreign
Mercury	Honda
Chrysler	Peugeot
Oldsmobile	Datsun
American Motors	Toyota
Lincoln	Mercedes

Best mechanic? Word of mouth is the method most car owners use to locate a good automotive service facility. Once you have found what you think to be a good shop, trust them with

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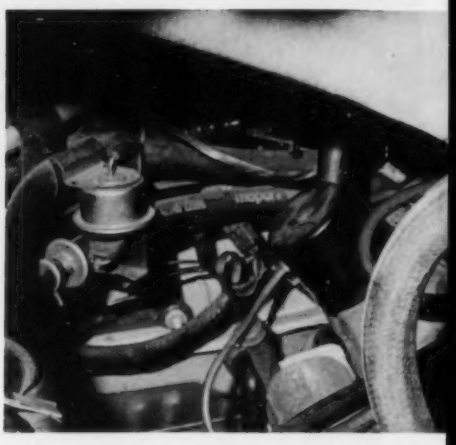

(above)
If you suspect your car is vapor locked (an air bubble in the fuel line, usually on a hot day), try soaking a rag in water and covering up the fuel pump and any exposed fuel line, especially the section of line on top of the engine near the carburetor. This will cause the bubble to contract and allow fuel to flow again.

(above)
Leaks in radiator or heater hoses can be temporarily fixed with judicious use of duct tape. Take eight or ten turns around the section that leaks and you should be back in business for a while. Two things to remember though . . . make sure pressure is off the system by keeping the radiator cap loose, and try to get the hose surface dry before you apply the tape.

(left)
If the connections on your battery look like this, you'll be in for electrical trouble before you know it. Use hot water to remove the corrosion, remove the terminal from the battery post and clean it well, and then apply a coating of commercial terminal coating material after you re-install the terminal on the battery.

A broken heater hose can be by-passed by using the other heater hose. Disconnect the broken one from the engine block, and the good one from the heater connection. Attach the good hose to the other connection at the engine block. This will take the heater out of the system but will allow cooling water to circulate in the engine.

a few small jobs. If these jobs are performed to your satisfaction and within the agreed-to-price, then you can trust them with the more complicated repairs.

We suggest you note your odometer reading when you take your car in for repair, and compare the mileage when the vehicle is returned. This will show whether the car was road-tested by the mechanic, and if he tested it via Topeka, Kansas.

Also remember, no reputable repair facility will begin major repairs without your authorization, but make it a point to get this understood ahead of time. The same thing goes for cost estimates.

Telltale leaks. Your car carries about six fluids that affect its safety and dependability . . . a leak can mean potential trouble. If you think you have a fluid leak, slide a newspaper under the car and leave it for the night. If you mark where the front wheels were in relation to the newspaper, your mechanic can diagnose the leak and tell you if it's coming from the power steering, transmission, engine, brakes, or fuel line.

Fuel filters. Your car has a fuel filter somewhere in the gas delivery system. Its purpose is to strain out the bits and pieces of yuck that can clog up carburetor jets, and if it does its job, it gets dirty. A dirty fuel filter can cause a loss of power at highway speeds, a coughing or backfiring of the engine through the carburetor, and a dying of the engine just prior to upshifting. Best bet is to change the fuel filter at every other oil change, or every 12,000 miles.

Hose problems. We're not talking about Joe Namath's panty hose, we're talking about the hoses under your hood. Most hose problems can be spotted just by looking at the hose. The most obvious problem is leaking, either at the hose connection or from the hose itself.

It's best to check each hose by squeezing it. Hoses should be firm but not brittle, and a spongy hose means trouble.

Also check the hose for cracks or breaks which cause leaks that cannot be stopped by tightening the clamps. If cracks go down into hose reinforcing cords, it's replacement time.

A hardened hose is stiff and will transmit engine vibrations to the radiator inlet and outlet tubes and can cause them to break away from the radiator.

A swelling or spongy hose may indicate a failure caused by softening due to grease or oil.

Hoses may also fail internally and small flakes or rubber will break off and clog radiator and heater core tubes.

Replace all worn clamps that can't be tightened and, when replacing hoses, always replace the hose clamps as well.

Wild swinger? Relax, we're not talking about your cousin Willie . . . we're addressing the subject of speedometer cables. Does the needle on your speedometer waver or swing wildly on a cold day? Do you hear a buzzing or grinding sound, usually intermittent, from under the dash? Is your cruise control a bit unsteady (more than 5 mph variation)?

These are signs that the speedometer cable(s) need(s) lubrication. You can do it yourself.

Disconnect the battery at the ground (−) terminal. Reach under the dash (after removing rings, watches, bracelets, etc.) and extend your hand to the back of the speedometer head. Be careful not to disturb any of the wiring behind the dash or dislodge any dash bulb light sockets.

Firmly grasp the knurled or serrated nut that holds the cable to the back of the speedometer head and unscrew it. The nut will slide back over the speedometer cable housing as it is removed.

Pull the cable housing away from the speedometer head and bring the end down to where you can grasp the square end of the cable and pull it from the cable housing. You should cover the floor and car seat with plastic or cloth to prevent the cable from staining them as well as to prevent junk from getting on the cable.

Pull the rest of the cable from the housing. Then carefully smear a graphite-type lubricant (or the one called for in the tech manual) over the entire length of the cable, coiling the cable in one hand as the lube is applied.

Again being careful not to let the cable come in contact with dirt or the car interior, insert the lower end back into the cable housing and push the rest of the cable through. You may have to

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twist it a few times to ease the passage.

When the cable bottoms out, turn the cable again while continuing to push. This will insure the cable enters the drive gear in the transmission or cruise control. Line up the cable and the speedometer head (sounds easy, but it may take a few tries). Insert the square end of the cable into the back of the speedometer head. Bring the nut back up the cable housing and rethread it onto the speedometer head, tightening it fingertight.

If the car is equipped with cruise control, repeat the procedure with the cable that runs from the cruise control connector to the transmission.

If you feel the cable "catch" when reinstalling it in the housing, examine the housing for sharp bends or kinks.

Reconnect the battery. This should take care of the situation for another 50,000 miles.

Water in the trunk? A failure to repair trunk leaks can result in a rusted-out trunk floor and damage to trunk contents. A rusted jack can't raise a car safely, and holes in the trunk floor are prime candidates for carbon monoxide seepage.

If your automatic transmission shifts hard, or is slow in shifting, or won't shift from low to high, first check the automatic transmission fluid level. If it's OK, put the car on safety stands and check the modulator valve and the vacuum line that attaches to it. This valve is usually located on the back of the transmission case. If the valve is leaking fluid or if the rubber vacuum line has cracks, you've traced your problem.

If your car's trunk becomes a swimming pool after a rain or a trip to the car wash, sweep the water from the trunk through the drain after removing the spare tire and any drain plugs at the bottom of the spare tire well. Sponge up the remaining water.

If the trunk or spare tire well doesn't have a drain hole, consider drilling a half inch hole in the well or lowest part of the trunk floor, and then buy a rubber plug for it. Be careful not to drill into the gas tank during this operation, though, it could ruin your day.

Check the rubber gasket or seal around the trunk opening. Is it broken? Loose, Distorted? Is part of it missing? When regluing the seal or replacing missing portions, be sure that the surfaces are clean and dry before you apply the adhesive.

If that doesn't cure the problem, you probably have a leak under or near the rear window. Get a small person to climb inside the trunk with a flashlight. Shut the lid and run water on the car with a hose. Your friend should be able to trace the cause of the leak. If this proves to be the problem, remove the trim around the window to assure the glue is bonding.

You'll probably find some rust holes under the window that have been covered up by the trim. Plug them with silicone sealer or automotive caulk, replace the trim, let dry, and leak-check.

If the jack has rusted, don't forget to spray it with a good-quality rust inhibitor/lubricant, and cycle it a few times before you return it to the trunk.

A last tip comes to us from Lt Col Robert Vick of Det. 27, 12th Weather Squadron, and it concerns procedures for working with fiberglass resin or plastic body fillers.

"I suggest that you mix the resin or putty in a plastic container, such as an old margarine container. When the putty or resin has dried, you can just flip the remains out of the container and the container can be used over and over.

"Use Saran wrap or wax paper over a fiberglass or putty patch to smooth out, shape, or hold in place. A flat board over the wax paper will assure your patch conforms to the area you are trying to match. When the patch is dry, the paper strips right off and less sanding is required to finish the job."

by Capt JAMES W. LIDDELL
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Jackson MS

AIR GUARDSMAN REBUILDS CHEVY WITH GUARD CHECK$$

Take one Air Guardsman and his weekend paycheck, add one fair-condition Chevy Sedan Delivery, and what do you get?

One very busy Guardsman, several very spent paychecks, and one very mint-condition 1955 Chevy Sedan Delivery. You also get a full-color picture of the Chevy on the cover of a national hobbyist's magazine, the *Classic Chevy World*.

SSgt H. Keith Burton, a Security Policeman with the 172nd Tactical Arilift Group, Thompson Field, Jackson, Mississippi, is the Guardsman, and the accompanying pictures illustrate his nuts and bolts beauty.

Only 8,000 were manufactured of this particular model, and the vast majority were "used-up" over the years by businessmen-owners.

Burton, however, was lucky. He found his Chevy Sedan Delivery only 10 miles from home, and in fair condition. The body work was not a big task, but the engine (a weak and aged six) was a required replacement.

Burton solved the go power problem with a 350, 4-bolt main small block with a Z-28 cam, FI heads, needle-bearing rockers, 650 Holley carb, and finally, an electric fuel pump. Also added was a Corvette clutch and a Muncie 4-speed transmission.

(top)
Ask the man who owns one—SSgt H. Keith Burton is shown with a copy of the *Classic Chevy World* Magazine in which his prize-winning 1955 Chevy Sedan Delivery was the coverpage feature. Burton, a member of the Jackson (Miss.) Air Guard, paid all resotration costs with his Guard Drill paychecks.

(middle, left)
Mint Magnolia Motorcar—With all restoring costs financed by his Guard Drill paychecks, SSgt H. Keith Burton of the Jackson (Miss.) Air Guard is justified in posing his mint-condition 1955 Chevy Sedan Delivery near his unit's hangar. The Chevy was a recent coverpage feature in *Classic Chevy World*, a hobbyist magazine.

(right)
See how clean I keep it!—SSgt H. Keith Burton makes a quick inspection in the engine compartment of his 1955 Chevy Sedan Delivery. The vehicle was recently a second-place winner in a Jackson, Miss. Streetkana. Burton promises better "show" in upcoming events as he fine tunes the appearance of his pride and joy.

More weekend drill paychecks went to buy and install beefed-up 4.11 rear-end gears, Lakewood bars and Monroe shocks, rare Rader Phantom wheels, and a few other choice goodies.

By this time, you may be thinking that SSgt Burton is a speed maniac doing highspeed turns through the magnolias, but such is not the case. Burton's civilian job is that of a very law-abiding patrolman with the Jackson (Miss.) Police Department.

On the looks end of his Chevy project, SSgt Burton has added tuck and roll white interior trim with black carpet.

Even though he is still fine-tuning his expensive, silver-gray paint job, the Chevy was judged second-place winner in the Streetkana during a recent Classic Chevy Regional Convention.

It just goes to show what you can do with the Air Guard's drill weekend paychecks. Win, that's what!

LETTERS to the EDITOR — BACKFIRE

GARBAGE

What is this GARBAGE? Your readers must really be gullible to believe everything they read in your mag. The problem with you is that you don't tell both sides to the story of helmets. Why don't you tell about all the deaths that are caused by the brain bucket? Just like a hangman's noose, a helmet can break your neck.

I understand that some people may feel safe(?) with a hot, heavy, bulky helmet on. More power to them but let me make my choice. I let you make yours. If the problem is you don't don't know where to get "anti-helmet" info, try picking up a copy of *Easyriders*.

I doubt that this will ever make the pages of your mag cause you seem to be so ate up (sic) with "protecting me from myself." I do hope you stop printing your biased opinions about helmets and start printing something from our side of the fence.

In case you are wondering, I've been riding scoots for over seven years, and the times I did dump my bike I'm glad I didn't have a helmet. If I had, I would be dead. As it is, I don't even have a scar.

I've had my say, thank you. Oh, one more thing, DEATH TO THE HELMET LAWS!!! Thanks again.

Sgt David J. Anderson, USAF
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Mt Home AFB, ID 83647

We're sorry you think it's garbage, David. We don't think it is. So far, we have been able to find no evidence whatsoever that helmets increase injuries but we have overwhelming evidence that they save lives. The doctors who treat injured motorcyclists are convinced of the value of helmets. Here is what Dr. Ernest A. Austen, Chief of Surgery and Traumotology at a Maryland hospital, had to say last summer:

"During recent years we have experienced an ever-increasing number of admissions because of severe multiple trauma (injuries) from motorcycle accidents. Identification of those patients who were not wearing halmets at the time of the accident is readily determined by the types of injuries sustained. Individuals not wearing helmets almost invariably end up as organ donors (when the family permits) because of the severe and irreversible brain damage which leads to brain death. Injuries sustained by patients who were wearing helmets are primarily lower extremity trauma (leg and foot injuries). Although frequently severe, such injuries are compatible with a functional life . . .

"I've been informed that false claims have been made that the wearing of helmets increases the incidence of neck injuries. This could not be farther from the truth. In our experience, less than one per cent of the motorcyclists admitted (to our hospital) have had neck injuries, none of which were severe."

HELMETS

While reading through your Feb '78 issue of DRIVER I came across a letter in your "Backfire" column that really has me "torqued." The letter from Sgt Osgood said that helmets and other safety equipment should be made mandatory in all states. I disagree wholeheartedly! While stationed in Jacksonville, Fla., I had the opportunity to ride many times. I, for one, do not like to wear a helmet and did not enjoy being forced to wear one. I would like to know where the good Sergeant gets the right to say what others should or should not be allowed to wear! I have, and will continue to fight all such legislation. I hope that one day America will once again be the home of the free!

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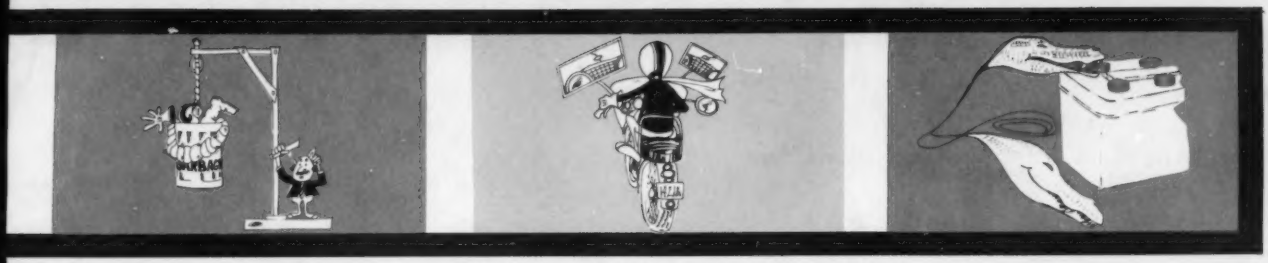
For an explanation of the legal views about helmet laws, read the article in our May issue.

MOTORCYCLE SAFETY

It's unfortunate that the military mind is often "locked in" on absolutes. In other words, if A should happen, take step B, to obtain results C. I suppose that comes from reading too many checklists. It's also unfortunate that this rationale cannot be applied to motorcycles. Riding a motorcycle involves such a vast presentation of circumstances that what is correct procedure today may hurt you tomorrow. A case in point being the rear-end accident described in your Feb '78 edition.

Here we have an individual who prides himself on keeping his bike in neutral. Well, fine. This practice is recommended in Motorcycle Challenges (MM-12), the AF safety course. I personally keep mine in gear. As I inspect and maintain my cables religiously I don't worry much about binding, fraying, or breaking. I do worry about rear-enders! Several times I have avoided accidents such as described by picking a spot to head for in advance and concentrating on my mirrors. I never assume I'm safe simply because I'm stopped. At the sound of squealing tires I don't assume anything, I just move – fast! One ounce of prevention is worth a pound of road-rash!

I'm afraid I must take umbrage with the individual who wishes to have more and tougher laws to protect people



from themselves. I wear all the protective gear myself and I believe in it. I further believe that people should be educated in the value of this equipment. I vehemently oppose the mandatory laws and the reasoning behind them.

The organizations which propose these mandates are using the old-line supervisors' cop-out. "You'll do it because you were told to do it." This is contradictory to everything I've ever learned as a supervisor. Mandatory laws are enacted because they are visible action and they are the easy way to get people to do what you want. They are not necessarily the right way.

One thought I leave for the guy who thinks people should be protected from themselves: Not so long ago there was a man who decided that the world should be protected from a certain ethnic group, whether they liked it or not!

TSgt Richard W. Morrison, USAF
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BOATING TIPS

Capt Ben Kiningham listed some boating tips in your Oct '77 column. I would like to expand on his recommendation to pack the trailer's wheel bearings annually.

During travel to the launch site the bearings heat up. As the boat is backed into the water and the wheels submerge they are cooled rapidly, which causes a vacuum in the bearings which in turn sucks water into the bearings. How much water depends on how much grease is present.

Late in the boating season, if you've made more than a couple of trips to the lake, you could experience burned-out bearings. A small investment in "Bearing Buddies" and an inexpensive grease gun could save all the trouble. The "Buddies" are grease cups that fit over the wheel hubs. Check to see they are full just before launching the boat, and then grease will be sucked into the bearings instead of water.

Capt Larry Maatts, USAF
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Thanks, Larry, for the good tip!

HUDSON BELIEVER

I can really identify and sympathize with "Declaring Independence from a Dealer." From March '73 to July '77 my everyday transportation while stationed at Fort Carson, Colorado was a 1951 Hudson Super 6. In spite of the drawbacks such as lack of dealers and scarcity of parts, the Hudson was enjoyable and reliable transportation. I visited 25 states with it and was never really far from a dealer since the National Hudson Club is 3,000 members strong.

The car is now in storage, but when I get back it will come out of mothballs to again be my unique transportation. Not bad for a $168.00 car!

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HQ 7th Region, USACIDC
APO San Francisco 96301

Not bad at all!

GROUND—
THE OTHER HALF
OF THE CIRCUIT

I enjoyed your "Backyard Mechanic" Electrical Systems feature, but I would like to add a little bit about "Ground – the other half of the circuit."

Rusty bolts where body joins frame, paint around light sockets, a well-greased trailer hitch ball, or trunk hinges don't sound like electrical problems, but if they lay in the path to ground they are just as bad as a broken wire.

One of the handiest tools I own is a 20-foot jumper wire with alligator clips. One end attaches to the battery negative terminal, the other to a bare metal part of the problem component. If the trouble ceases, then ground is at fault and the repair usually consists only of cleaning and tightening screws in the ground path, or installing a permanent ground wire to the frame.

This can save hours, maybe even days of checking fuses, links, switches, batteries, and untold yards of wire that always seem to be routed through inaccessible places.

MMC(SS) Dave Reynard, USN
USS Aspro (SSN-648)
FPO San Francisco 96601

Thanks for the tip, Dave.

LIFESAVING TIP

I enjoyed your article "Patience With Pedestrians" very much. However, I feel that I may be able to add a lifesaving tip.

When driving on a residential street, look underneath the wheels of parked cars in front of you. One can see only a few square feet of space between parked cars in this way, but this is enough to detect little feet or a moving shadow that could mean a small child about to dart out right in front of your bumper. It gives the driver a few more precious seconds to slow, stop, or steer.

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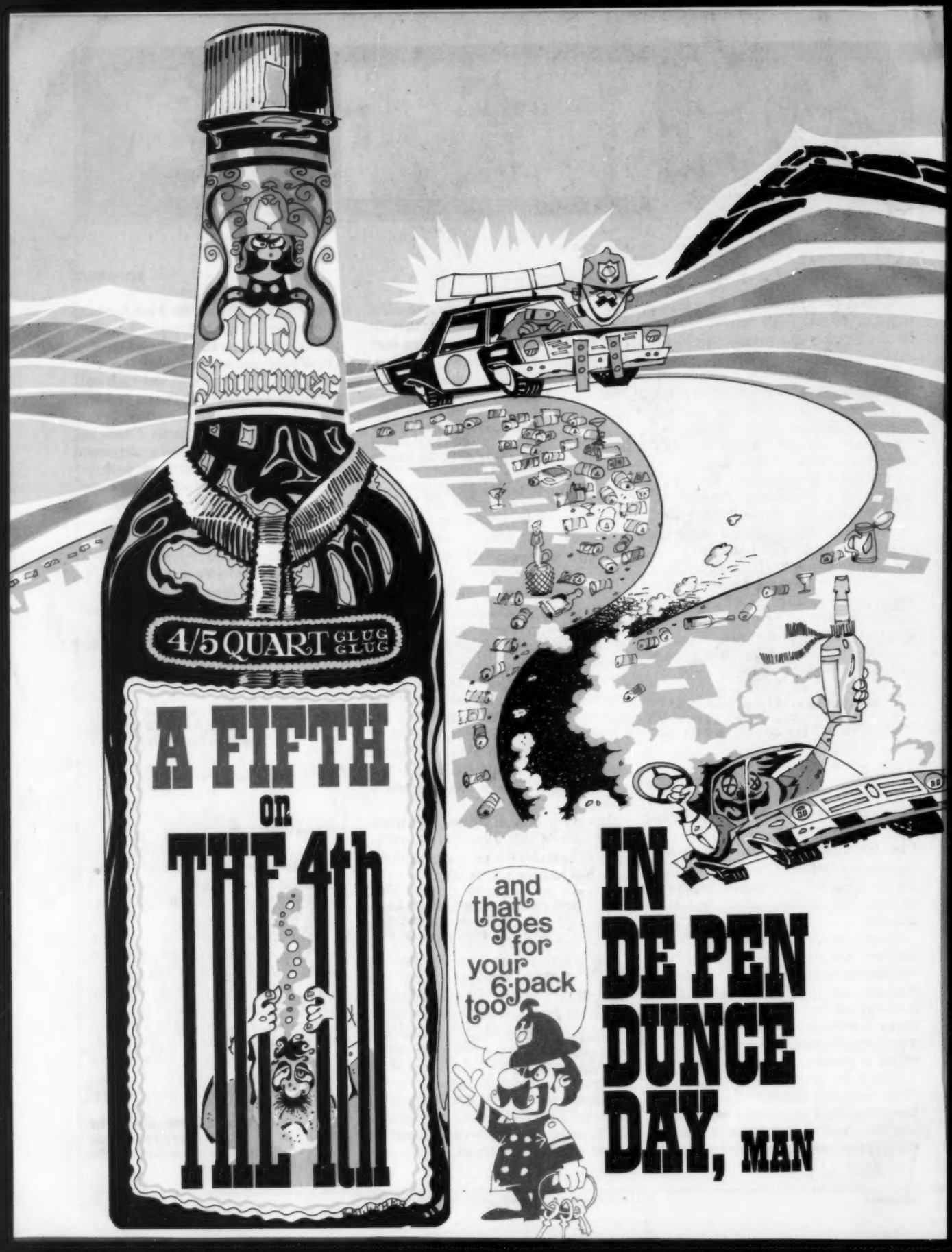
Old Slammer
4/5 QUART GLUG GLUG
A FIFTH
on
THE 4th
and that goes for your 6-pack too
IN DE PEN DUNCE DAY, MAN